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VOL. VI. OCTOBER, 1895. NO. 1.

THE MONIST.

THE DARWINISM OF DARWIN, AND OF THE POST-DARWINIAN SCHOOLS.[1]

I PROPOSE in this article to take a brief survey of the general theory of descent, first, as this was held by Darwin himself, and next, as it is now held by the several divergent schools of thought which have arisen since Darwin's death.

The most important of the questions in debate is one which I have already had occasion to mention, while dealing, in historical order, with the objections that were brought against the theory of natural selection during the life-time of Darwin.[2] Here, however, we must consider it somewhat more in detail, and justify by quotation what was previously said regarding the very definite nature of his utterances upon the matter. This question is whether natural selection has been the sole, or but the main, cause of organic evolution.

Must we regard survival of the fittest as the one and only principle which has been concerned in the progressive modification of living forms, or are we to suppose that this great and leading principle has been assisted by other and subordinate principles, without the co-operation of which the results, as presented in the animal and

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[1] From a forthcoming volume on *Post-Darwinian Questions*, being Part II. of *Darwin and After Darwin*, edited by Prof. C. Lloyd Morgan. Copyright in the United States by The Open Court Publishing Co.; in England, by Messrs. Longman & Co.

[2] *The Darwinian Theory*, pp. 253–256.

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vegetable kingdoms, could not have been effected? Now Darwin's answer to this question was distinct and unequivocal. He stoutly resisted the doctrine that natural selection was to be regarded as the only cause of organic evolution. On the other hand, this opinion was—and still continues to be—persistently maintained by Mr. Wallace;[1] and it constitutes the source of all the differences between his views and those of Darwin. Moreover, up to the time of Darwin's death, Mr. Wallace was absolutely alone in maintaining this opinion: the whole body of scientific thought throughout the world being against him; for it was deemed improbable that, in the enormously complex and endlessly varied processes of organic evolution, only a single principle should be everywhere and exclusively concerned.[2] But since Darwin's death there has been a great revolution of biological thought in favor of Mr. Wallace's opinion. And the reason for this revolution has been, that his doctrine of natural selection as the sole cause of organic evolution has received the corroborative support of Professor Weismann's theory of heredity—which has been more or less cordially embraced by a certain section of evolutionists, and which appears to carry the doctrine in question as a logical corollary, so far, at all events, as adaptive structures are concerned.

Now in this article we shall have to do merely with a setting forth of Darwin's opinion: we are not considering how far that opinion ought to be regarded as having been in any measure displaced by the results of more recent progress. Such, then, being the only matter which here concerns us, I will supply a few brief quotations, to show how unequivocally Darwin has stated his views.

---

[1] "It is a misfortune attending the aim and scope of Part II. that they bring me into frequent discord with one or other of the most eminent of Post-Darwinian writers—especially with Mr. Wallace. But such is the case only because the subject-matter of this volume is avowedly restricted to debatable topics, and because I choose those naturalists who are deservedly held in most esteem to act spokesmen on behalf of such Post-Darwinian views as appear to me doubtful or erroneous. Obviously, however, differences of opinion on particular points ought not to be taken as implying any failure on my part to recognise the general scientific authority of these men, or any inability to appreciate their labors in the varied fields of Biology."—Quoted from the Preface of *Post-Darwinian Questions*.—ED.

[2] *Contributions to the Theory of Natural Selection*, p. 47.

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First, we may take what he says upon the "Lamarckian factors";[1] and next we may consider what he says with regard to other factors, or, in general, upon natural selection not being the sole cause of organic evolution.

"Changed habits produce an inherited effect, as in the period of the flowering of plants when transported from one climate to another. With animals the increased use or disuse of parts has had a more marked influence."[2]

"There can be no doubt, from the facts given in this chapter, that extremely slight changes in the conditions of life sometimes, probably often, act in a definite manner on our domesticated productions; and, as the action of changed conditions in causing indefinite variability is accumulative, so it may be with their definite action. Hence considerable and definite modifications of structure probably follow from altered conditions acting during long series of generations."[3]

"How, again, can we explain the inherited effects of the use and disuse of particular organs? The domesticated duck flies less and walks more than the wild duck, and its limb bones have become diminished and increased in a corresponding manner in comparison with those of the wild duck. A horse is trained to certain paces, and the colt inherits similar consensual movements. The domesticated rabbit becomes tame from close confinement; the dog, intelligent from associating with man; the retriever is taught to fetch and carry; and these mental endowments and bodily powers are all inherited. Nothing in the whole circuit of physiology is more wonderful. How can the use or disuse of a particular limb or of the brain affect a small aggregate of reproductive cells, seated in a distant part of the body, in such a manner that the being developed from these cells inherits the characters of either one or both parents? . . . In the chapters devoted to inheritance, it was shown that a multitude of newly acquired characters, whether injurious or beneficial, whether of the lowest or highest vital importance, are often faithfully transmitted.[4]"

"When discussing special cases, Mr. Mivart passes over the effects of the increased use and disuse of parts, which I have always maintained to be highly important, and have treated in my 'Variation under Domestication' at greater length than, as I believe, any other writer.[5]"

---

[1] So far as we shall be concerned with them throughout this treatise, the "Lamarckian factors" consist in the supposed transmission of acquired characters, whether the latter be due to the direct influence of external conditions of life on the one hand, or to the inherited effects of use and disuse on the other. For the phrase "inherited effects of use and disuse," I shall frequently employ the term "use-inheritance," which has been coined by Mr. Platt Ball as a more convenient expression.

[2] *Origin of Species*, 6th Ed., p. 8.

[3] *Variation* etc., 2nd Ed., II., p. 280.

[4] *Variation* etc., II., p. 367.

[5] *Origin of Species*. p. 176.

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So much for the matured opinion of Darwin touching the validity of the theory of use-inheritance. Turning now to his opinion on the question whether or not there are yet any further factors concerned in the process of organic evolution, I think it will be sufficient to quote a single passage from the *Origin of Species*. The first paragraph of the "Conclusion" is devoted to a *résumé* of his views upon this matter, and consists of the following most emphatic words.

"I have now recapitulated the facts and considerations which have thoroughly convinced me that species have been modified, during a long course of descent. This has been effected chiefly through the natural selection of numerous successive, slight, favorable variations; aided in an important manner by the inherited effects of the use and disuse of parts; and in an unimportant manner, that is, in relation to adaptive structures, whether past or present, by the direct action of external conditions, and by variations which seem to us in our ignorance to arise spontaneously. It appears that I formerly underrated the frequency and value of these latter forms of variation, as leading to permanent modifications of structure independently of natural selection. But as my conclusions have lately been much misrepresented, and it has been stated that I attribute the modification of species exclusively to natural selection, I may be permitted to remark that in the first edition of this work, and subsequently, I placed in a most conspicuous position—namely, at the close of the Introduction—the following words: 'I am convinced that natural selection has been the main, but not the exclusive means of modification.' This has been of no avail. Great is the power of steady misrepresentation; but the history of science shows that fortunately this power does not long endure."

In the whole range of Darwin's writings there cannot be found a passage so strongly worded as this: it presents the only note of bitterness in all the thousands of pages which he has published. Therefore I do not think it is necessary to supply any further quotations for the purpose of proving the state of his opinion on the point in question. But, be it carefully noted, from this great or radical difference of opinion between the joint originators of the theory of natural selection, all their other differences of opinion arise; and seeing that since the death of Darwin a large number of naturalists have gone over to the side of Wallace, it seems desirable here to state categorically what these other or sequent points of difference are. Without at present discussing them, therefore, I will

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merely set them out in a tabular form, in order that a clear perception may be gained of their logical connexion with this primary point of difference.

The theory of Natural Selection according to Darwin.	*The theory of Natural Selection according to Wallace.*
Natural Selection has been the main means of modification, not excepting the case of Man.	Natural Selection has been the sole means of modification, excepting in the case of Man.
a. Therefore it is a question of evidence whether the Lamarckian factors have co-operated.	*a.* Therefore it is antecedently impossible that the Lamarckian factors can have co-operated.
b. Neither all species, nor *a fortiori*, all specific characters, have been due to natural selection.	*b.* Not only all species, but all specific characters, must necessarily have been due to natural selection.
c. Thus the principle of Utility is not of universal application, even where species are concerned.	*c.* Thus the principle of Utility must necessarily be of universal application, where species are concerned.
d. Thus, also, the suggestion as to Sexual Selection, or any other supplementary cause of modification, may be entertained; and, as in the case of the Lamarckian factors, it is a question of evidence whether, or how far, they have co-operated.	*d.* Thus, also, the suggestion as to Sexual Selection, or of any other supplementary cause of modification, must be ruled out; and, as in the case of the Lamarckian factors, their co-operation deemed impossible.
e. No detriment arises to the theory of natural selection as a theory of the origin of species by entertaining the possibility, or the probability, of supplementary factors.	*e.* The possibility — and, a *fortiori* the probability—of any supplementary factors cannot be entertained without serious detriment to the theory of natural selection, as a theory of the origin of species.
f. Cross-sterility in species cannot possibly be due to natural selection.	*f.* Cross-sterility in species is probably due to natural selection.[1]

[1] This, to the best of my judgment, is the fairest extract that I can give of Mr. Wallace's most recently published opinions on the points in question. [In particular as regards *a*, see *Darwinism*, pp. 435–436.] But with regard to some of them, his expression of opinion is not always consistent. Besides, I am here taking Mr. Wallace as representative of the Neo-Darwinian school, one or other prominent member of which has given emphatic expression to each of the above propositions.

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As it will be my endeavor in my forthcoming book to consider the rights and the wrongs of these antithetical propositions, I may reserve further quotations from Darwin's works, which will show that the above is a correct epitome of his views as contrasted with those of Wallace and the Neo-Darwinian school of Weismann. But here, where the object is merely a statement of Darwin's theory touching the points in which it differs from those of Wallace and Weismann, it will be sufficient to set forth these points of difference in another and somewhat fuller form. So far then as we are at present concerned, the following are the matters of doctrine which have been clearly, emphatically, repeatedly, and uniformly expressed throughout the whole range of Darwin's writings.

1. That natural selection has been the main means of modification.

2. That, nevertheless, it has not been the only means; but has been supplemented or assisted by the co-operation of other causes.

3. That the most "important" of these other causes has been the inheritance of functionally-produced modifications (use-inheritance), but this only because the transmission of such modifications to progeny must always have had immediate reference to *adaptive* ends, as distinguished from merely useless change.

4. That there are sundry other causes which lead to merely useless change—in particular, "the direct action of external conditions, and variations which seem to us in our ignorance to arise spontaneously."

5. Hence, that the "principle of utility," far from being of universal occurrence in the sphere of animate nature, is only of what may be termed highly general occurrence; and, therefore, that certain other advocates of the theory of natural selection were mistaken in representing the universality of this principle as following by way of necessary consequence from that theory.

6. Cross-sterility in species cannot possibly be due to natural selection: but everywhere arises as a result of some physiological change having exclusive reference to the sexual system—a change which is probably everywhere due to the same cause, although what this cause could be Darwin was confessedly unable to suggest.

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Such, then, was the theory of evolution as held by Darwin, so far as the points at present before us are concerned. And, it may now be added, that the longer he lived, and the more he pondered these points, the less exclusive was the rôle which he assigned to natural selection, and the more importance did he attribute to the supplementary factors above named. This admits of being easily demonstrated by comparing successive editions of his works; a method adopted by Mr. Herbert Spencer in his essay on the *Factors of Organic Evolution.*

My object in thus clearly defining Darwin's attitude regarding these sundry points is twofold.

In the first place, with regard to merely historical accuracy, it appears to me undesirable that naturalists should endeavor to hide certain parts of Darwin's teaching, and give undue prominence to others. In the second place, it appears to me still more undesirable that this should be done—as it usually is done—for the purpose of making it appear that Darwin's teaching did not really differ very much from that of Wallace and Weismann on the important points in question. I myself believe that Darwin's judgment with regard to all these points will eventually prove more sound and accurate than that of any of the recent would-be improvers upon his system; but even apart from this opinion of my own, it is undesirable that Darwin's views should be misrepresented, whether the misrepresentation be due to any unfavorable bias against one side of his teaching, or to sheer carelessness in the reading of his books. Yet the new school of evolutionists, to which allusion has now so frequently been made, speak of their own modifications of Darwin's teaching as "pure Darwinism," in contradistinction to what they call "Lamarckism." In other words, they represent the principles of "Darwinism" as standing in some kind of opposition to those of "Lamarckism": the Darwinian principle of natural selection, they think, is in itself enough to account for all the facts of adaptation in organic nature. Therefore they are eager to dispense with the Lamarckian principle of the inherited effects of use and disuse, together with the direct influence of external conditions of life, and all or any other causes of modification which either have been, or in

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the future may possibly be, suggested. Now, of course, there is no reason why any one should not hold these or any other opinions to which his own independent study of natural science may lead him; but it appears to me that there is the very strongest reason why any one who deviates from the carefully formed opinions of such a man as Darwin should above all things be careful to be absolutely fair in his representations of them; he should be scrupulously jealous, so to speak, of not letting it appear that he is unjustifiably throwing over his own opinions the authority of Darwin's name.

But in the present case, as we have seen, not only do the Neo-Darwinians strain the teachings of Darwin; they positively reverse those teachings—representing as anti-Darwinian the whole of one side of Darwin's system, and calling those who continue to accept that system in its entirety by the name "Lamarckians." I know it is sometimes said by members of this school, that in his utilisation of Lamarckian principles as accessory to his own, Darwin was actuated by motives of "generosity." But a more preposterous suggestion could not well be made. We may fearlessly challenge any one who speaks or writes in such a way, to show any other instance where Darwin's great generosity of disposition had the effect of influencing by one hair's breadth his still greater loyalty to truth. Moreover, and with special regard to this particular case, I would point out that in no one of his many allusions to, and often lengthy discussions of, these so-called Lamarckian principles, does he ever once introduce the name of Lamarck; while, on the other hand, in the only places where he does so—whether in his books or in his now published letters—he does so in order to express an almost contemptuous dissatisfaction, and a total absence of obligation. Hence, having regard to the "generosity" with which he always acknowledged obligations, there can be no reasonable doubt that Darwin was not in the smallest degree influenced by the speculative writings of Lamarck; or that, even if Lamarck had never lived, the *Origin of Species* would have differed in any single particular from the form in which it now stands. Finally, it must not be forgotten that Darwin's acceptance of the theory of use-inheritance was vitally essential to his theory of Pangenesis—that "beloved child" over which

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he had "thought so much as to have lost all power of judging it."[1]

What has just been said touching the relations between Darwin's theory and that of Lamarck, applies with equal force to the relations between Darwin's theory and any other theory appertaining to evolution which has already been, or may hereafter be propounded. Yet so greatly have some of the Neo-Darwinians misunderstood the teachings of Darwin, that they represent as "Darwinian heresy" any suggestions in the way of factors "supplementary to," or "co-operative with" natural selection. Of course, if these naturalists were to avow themselves followers of Wallace, instead of followers of Darwin, they would be perfectly justified in repudiating any such suggestions as *ipso facto* heretical. But, as we have now seen, through all his life Darwin differed from Wallace with regard to this very point; and therefore, unlike Wallace, he was always ready to entertain "additional suggestions" regarding the causes of organic evolution—several of which, indeed, he himself supplied. Hence we arrive at this curious state of matters. Those biologists who of late years have been led by Weismann to adopt the opinions of Wallace, represent as anti-Darwinian the opinions of other biologists who still adhere to the unadulterated doctrines of Darwin. Weismann's *Essays on Heredity* (which argue that natural selection is the only possible cause of adaptive modification) and Wallace's work on *Darwinism* (which in all the respects where any charge of "heresy" is concerned directly contradicts the doctrine of Darwin) —these are the writings which are now habitually represented by the Neo-Darwinians as setting forth the views of Darwin in their "pure" form. The result is that, both in conversation and in the press, we habitually meet with complete inversions of the truth, which show the state of confusion into which a very simple matter has been wrought by the eagerness of certain naturalists to identify the views of Darwin with those of Wallace and Weismann. But we may easily escape this confusion, if we remember that wherever in the writings of these naturalists there occur such phrases as "pure

[1] *Life and Letters*, Vol. III., pp. 72 and 75.

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Darwinism" we are to understand pure *Wallaceism*, or the pure theory of natural selection to the exclusion of any supplementary theory. Therefore it is that for the sake of clearness I coined, several years ago, the terms "Neo-Darwinian" and "Ultra-Darwinian" whereby to designate the school in question.

So much, then, for the Darwinism of Darwin, as contrasted with the Darwinism of Wallace, or, what is the same thing, of the Neo-Darwinian school of Weismann. Next we may turn, by way of antithesis, to the so-called "Neo-Lamarckian" school of the United States. For, by a curious irony of fate while the Neo-Darwinian school is in Europe seeking to out-Darwin Darwin by assigning an exclusive prerogative to natural selection in both kingdoms of animate nature, the Neo-Lamarckian school is in America endeavoring to reform Darwinism in precisely the opposite direction—viz. by transferring the sovereignty from natural selection to the principles of Lamarck. Without denying to natural selection a more or less important part in the process of organic evolution, members of this school believe that much greater importance ought to be assigned to the inherited effects of use and disuse than was assigned to these agencies by Darwin. Perhaps this noteworthy state of affairs, within a decade of Darwin's death, may lead us to anticipate that his judgment—standing, as it does, between these two extremes—will eventually prove the most accurate of all, with respect to the relative importance of these factors of evolution. But, be this as it may, I must now offer a few remarks upon the present position of the matter.

In the first place, to any one who (with Darwin and against Weismann) admits not only the abstract possibility, but an actual working, of the Lamarckian factors, it becomes difficult to determine, even approximately, the degrees of value which ought to be ascribed to them and to natural selection respectively. For, since the results are in both cases identical in kind (as, adaptive changes of organic types), where both sets of causes are supposed to be in operation together, we have no means of estimating the relative shares which they have had in bringing about these results. Of course there are large numbers of cases where it cannot possibly be

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supposed that the Lamarckian factors have taken any part at all in producing the observed effects; and therefore in such cases there is almost full agreement among evolutionists in theoretically ascribing such effects to the exclusive agency of natural selection. Of such, for instance, are the facts of protective coloring, of mimicry, of the growth of parts which, although *useful*, are never *active* (e. g. shells of mollusks, hard coverings of seeds), and so on. But in the majority of cases where adaptive structures are concerned, there is no means of discriminating between the influences of the Lamarckian and the Darwinian factors. Consequently, if by the Neo-Lamarckian school we understand all those naturalists who assign any higher importance to the Lamarckian factors than was assigned to them by Darwin, we may observe that members of this school differ very greatly among themselves as to the degree of importance that ought to be assigned. On the one hand we have, in Europe, Giard, Perrier, and Eimer, who stand nearer to Darwin than do a number of the American representatives—of whom the most prominent are Cope, Osborn, Packard, Hyatt, Brooks, Ryder, and Dall. The most extreme of these is Professor Cope, whose collection of essays entitled *The Origin of the Fittest*, as well as his more recent and elaborate monograph on *The Development of the Hard Parts of the Mammalia* represent what appears even to some other members of his school an extravagant estimate of the importance of Lamarckian principles.

But the most novel, and in many respects the most remarkable school of what may be termed Anti-selectionists is one which is now (1894) rapidly increasing both in numbers and in weight, not only in the New World, but also in Germany, and to a lesser extent, in Great Britain.

This school, without being either Lamarckian or Darwinian (for its individual members differ widely from one another in these respects) maintains a principle which it deems of more importance than either use-inheritance or natural selection. This principle it calls Self-adaptation. It is chiefly botanists who constitute this school, and its principal representatives, in regard to authority, are Sachs, Pfeffer and Henslow.

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Apart from topics which are to be dealt with in my book, the only matters of much importance which have been raised in the Post-Darwinian period are those presented by the theories of Geddes, Cope, Hyatt, and others, and certain more or less novel ideas set forth in Wallace's *Darwinism*.

Mr. Geddes has propounded a new theory of the origin of species, which in his judgment supersedes to a large extent the theory of natural selection. He has also, in conjunction with Mr. Thomson, propounded a theory of the origin of sex. For my own part, I cannot see that these views embody any principles or suggestions of a sufficiently definite kind to constitute them theories at all. In this respect the views of Mr. Geddes resemble those of Professors Cope, Hyatt, and others, on what they term "the law of acceleration and retardation." In all these cases, so far as I can see, the so-called explanations are not in fact any explanations; but either are a mere re-statement of the facts, or else an enunciation of more or less meaningless propositions. Thus, when it is said that the evolution of any given type has been due to the "acceleration of growth-force" with respect to some structures, and the "retardation of growth-force" with respect to others, it appears evident that we have not any real explanation in terms of causality; we have only the form of an explanation in the terms of a proposition. All that has been done is to express the fact of evolution in somewhat obscure phraseology, since the very thing we want to know about this fact is—What are the causes of it as a fact or the reasons which have led to the increase of some of the parts of any given type and the concomitant decrease of others? It is merely the facts themselves that are again presented by saying that the development has been in the one case accelerated, while in the other it has been retarded.[1]

[1]Take, for example, the following which is a fair epitome of the whole:—"I believe that this is the simplest mode of stating and explaining the law of variation; that some forms acquire something which their parents did not possess; and that those which acquire something additional have to pass through more numerous stages than their ancestors; and those which lose something pass through fewer stages than their ancestors; and these processes are expressed by the terms "acceleration" and "retardation." (*Origin of the Fittest*, pp. 125, 226, and 297.) Even

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So much for what may be termed this New World theory of the origin of species: it is a mere re-statement of the facts. Mr. Geddes's theory, on the other hand, although more than a mere re-statement of the facts, appears to me too vague to be of any explanatory service. His view is that organic evolution has everywhere depended upon an antagonism, within the limits of the same organism, between the processes of nutrition and those of reproduction. But although he is thus able hypothetically to explain certain facts —such as the shortening of a flower-spike into a composite flower— the suggestion is obviously inadequate to meet, even hypothetically, most of the facts of organic evolution, and especially the development of *adaptive* structures. Therefore it seems to me, we may dismiss it even as regards the comparatively few facts which it might conceivably explain—seeing that these same facts may be equally well explained by the causes which are already known to operate in other cases. For it is the business of natural selection to ensure that there shall nowhere be any needless expenditure of vital energy, and, consequently, that everywhere the balance between nutrition and reproduction shall be most profitably adjusted.

Similarly with respect to the theory of the *Origin of Sex*, I am unable to perceive even this much of scientific relevancy. As stated by its authors, the theory is that the female is everywhere "anabolic," as compared with the male, which is "katabolic." By anabolic is meant comparative inactivity of protoplasmic change due to a nutritive winding up of molecular constitution, while by katabolic is meant the opposite condition of comparative activity due to a dynamic running down of molecular constitution. How, then, can the *origin* of sex be explained, or the *causes* which led to the differentiation of the sexes be shown, by saying that the one sex is anabolic and the other katabolic? In so far as these verbal statements serve to express what is said to be a general fact—namely, that the female sexual elements are less mobile than the male—they merely serve to re-state this general fact in terminology which, as

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if this be "the simplest mode of *stating* the law of variation," it obviously does nothing in the way of *explaining* the law.

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the authors themselves observe, is "unquestionably ugly." But in so far as any question of *origin* or *causality* is concerned, it appears to me that there is absolutely no meaning in such statements. They belong to the order of merely formal explanations, as when it is said that the toxic qualities of morphia are due to this drug possessing a soporific character.

Much the same, in my opinion, has to be said of the Rev. G. Henslow's theory of the origin of species by what he terms "self-adaptation." Stated briefly, his view is that there is no sufficient evidence of natural selection as a *vera causa*, while there is very abundant evidence of adjustments occurring without it, first in individual organisms, and next by inheritance of acquired characters, in species. Now, much that he says in criticism of the selection theory is of considerable interest as such; but when we pass from the critical to the constructive portions of his books and papers, we again meet with the want of clearness in thought between a statement of facts in terms of a proposition, and an explanation of them in those of causality. Indeed, I understand from private correspondence, that Mr. Henslow himself admits the validity of this criticism; for in answer to my questions,—"How does self-adaptation work in each case, and why should protoplasm be able to *adapt itself* into the millions of diverse mechanisms in nature?"—he writes, "Self-adaptation does not profess to be a *vera causa* at all; for the true causes of variation can only be found in the answer to your [above] questions, and I must say at once, *these questions cannot be answered.*" That is, they cannot be answered on the hypothesis of self-adaptation, which is therefore a statement of the facts of adaptation as distinguished from an explanation of them. Nevertheless, two things have here to be noted. In the first place, the statement of facts which Mr. Henslow has collected is of considerable theoretical importance as tending to show that there are probably causes of an internal kind (i. e., other than natural selection) which have been largely concerned in the adaptive modification of plants. And, in the second place, it is not quite true that the theory of self-adaptation is, as its author says in the sentences above quoted, a mere statement of the facts of adaptation, without any

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attempt at explaining their causes. For in his published words he does attempt to do so.[1] And, although I think his attempt is a conspicuous failure, I ought in fairness to give examples of it. His books are almost exclusively concerned in an application of his theory to the mechanisms of flowers for securing their own fertilisation. These mechanisms he ascribes, in the case of entomophylous flowers, to the "thrusts," "strains," and other "irritations" supplied to the flowers by their insect visitors, and consequent "reactions" of the vegetable "protoplasm." But no attempt is made to show why these "reactions" should be of an *adaptive* kind, so as to build up the millions of diverse and often elaborate mechanisms in question—including not only forms and movements, but also colors, odors, and secretions. For my own part I confess that, even granting to an ultra-Lamarckian extent the inheritance of acquired characters, I should conceive of "self-adaptation" alone producing all such innumerable and diversified adjustments only after seeing, with Cardinal Newman, an angel in every flower. Yet Mr. Henslow somewhat vehemently repudiates any association between his theory and that of teleology.

On the whole, then, I regard all the works which are here classed together (those by Cope, Geddes, and Henslow) as resembling one another both in their merits and defects. Their common merits lie in their erudition and much of their criticism, while their common defects consist on the one hand in not sufficiently distinguishing between mere statements and real explanations of facts, and, on the other, in not perceiving that the theories severally suggested as substitutes for that of natural selection, even if they be granted true, could be accepted only as co-operative factors, and by no stretch of logic as substitutes.

Turning now to Mr. Wallace's work on *Darwinism*, we have to notice, in the first place, that its doctrine differs from "Darwinism" in regard to the important dogma which it is the leading purpose of that work to sustain—namely, that "the law of utility" is, to all in-

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[1] *Floral Structures* (International Science Series, LXIV., 1888); *The Making of Flowers* (Romance of Science Series, 1891); and Linn. Soc. Papers, 1893–1894.

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tents and purposes, universal, with the result that natural selection is virtually the only cause of organic evolution. I say, "to all intents and purposes" or "virtually," because Mr. Wallace does not expressly maintain the abstract impossibility of laws and causes other than those of utility and natural selection; indeed, at the end of his treatise he quotes with approval Darwin's judgment, that "natural selection has been the most important, but not the exclusive means of modification." Nevertheless, as he nowhere recognises any other law or cause of adaptive evolution,[1] he practically concludes that, on inductive or empirical grounds, there *is* no such other law or cause to be entertained—until we come to the particular case of the human mind. But even in making this one particular exception—or in representing that some other law than that of utility, and some other cause than that of natural selection, must have been concerned in evolving the mind of man—he is not approximating his system to that of Darwin. On the contrary, he is but increasing the divergence, for, of course, it was Darwin's view that no such exception could be legitimately drawn with respect to this particular instance. And if, as I understand must be the case, his expressed agreement with Darwin touching natural selection not being the only cause of adaptive evolution has reference to this point, the quotation is singularly inapt.

Looking, then, to these serious differences between his own doctrine of evolution—both organic and mental—and that of Darwin, I cannot think that Mr. Wallace has chosen a suitable title for his book; because, in view of the points just mentioned, it is unquestionable that *Darwinism* differs more widely from the *Origin of Species* than does the *Origin of Species* from the writings of the Neo-Lamarckians. But, passing over this merely nominal matter, a few words ought to be added on the very material question regarding the human mind. In my book the more general question, or that which relates to the range of utility and natural selection elsewhere will be fully considered.

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[1] "The law of correlation," and the "laws of growth," he does recognise; and shows that they furnish an explanation of the origin of many characters, which cannot be brought under "the law of utility."

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Mr. Wallace says :

"The immense interest that attaches to the origin of the human race, and the amount of misconception which prevails regarding the essential teachings of Darwin's theory on the question, as well as regarding my own special views upon it, induce me to devote a final chapter to its discussion."

Now I am not aware that there is any misconception in any quarter as to the essential teachings of Darwin's theory on this question. Surely it is rather the case that there is a very general and very complete understanding on this point, both by the friends and the foes of Darwin's theory—so much so, indeed, that it is about the only point of similar import in all Darwin's writings of which this can be said. Mr. Wallace's "special views" on the other hand are, briefly stated, that certain features, both of the morphology and the psychology of man, are inexplicable by natural selection—or indeed by any other cause of the kind ordinarily understood by the term natural: they can be explained only by supposing "the intervention of some distinct individual intelligence," which, however, need not necessarily be "one Supreme Intelligence," but some other order of Personality standing anywhere in "an infinite chasm between man and the Great Mind of the universe."[1] Let us consider separately the corporeal and the mental peculiarities which are given as justifying this important conclusion.

The bodily peculiarities are the feet, the hands, the brain, the voice, and the naked skin.

As regards the feet Mr. Wallace writes, "It is difficult to see why the prehensile power [of the great toe] should have been taken away," because, although "it may not be compatible with perfectly easy erect locomotion," "how can we conceive that early man, *as an animal*, gained anything by purely erect locomotion?"[2] But surely it is not difficult to conceive this. In the proportion that our simian progenitors ceased to be arboreal in their habits (and there may well have been very good utilitarian reasons for such a change of habitat, analogous to those which are known to have occurred in the phylogenesis of countless other animals), it would clearly have

[1] *Natural Selection and Tropical Nature*, 1891, p. 205.

[2] *Ibid.*, pp. 197 198.

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been of advantage to them that their already semi-erect attitude should have been rendered more and more erect. To name one among several probabilities, the more erect the attitude, and the more habitually it was assumed, the more would the hands have been liberated for all the important purposes of manipulation. The principle of the physiological division of labor would thus have come more and more into play: natural selection would therefore have rendered the upper extremities more and more suited to the execution of these purposes, while at the same time it would have more and more adapted the lower ones to discharging the sole function of locomotion. For my own part, I cannot perceive any difficulty about this: in fact, there is an admirable repetition of the process in the ontogeny of our own children.[1]

Next, with regard to the hand, Mr. Wallace says, that it "contains latent capacities which are unused by savages and must have been even less used by palæolithic man and his still ruder predecessors." Thus, "it has all the appearance of an organ prepared for the use of civilised man."[2] Even if this be true, however, it would surely be a dangerous argument to rely upon, seeing that we cannot say of how much importance it may have been for early man —or even apes—to have had their power of manipulation progressively improved. But is the statement true? It appears to me that if Mr. Wallace had endeavored to imitate the manufactures that were practised by "palæolithic man," he would have found the very best of reasons for cancelling his statement. For it is an extremely difficult thing to chip a flint into the form of an arrow-head: when made, the suitable attachment of it to a previously prepared arrow is no easy matter: neither a bow nor a bow-string could have been constructed by hands of much less perfection than our own: and the slaying of game with the whole apparatus, when it has been constructed, requires a manual dexterity which we may be perfectly

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[1] For an excellent discussion on the ontogeny of the child in this connexion see *Some Laws of Heredity*, by Mr. S. S. Buckman, pp. 290, et seq. (*Proc. Cotteswold Nat. Field Club*, Vol. X., p. 3, 1892).

[2] *Loc. cit.*, p. 198.

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certain that Mr. Wallace—unless he has practised the art from boyhood—does not possess.

So it is with his similar argument that the human voice is more "powerful," more "flexible," and presents a greater "range" and "sweetness" than the needs of savage life can be held to require. The futility of this argument is self-evident as regards "power." And although its weakness is not so obvious with respect to the other three qualities which are named, need we go further than the closely analogous case of certain birds to show the precariousness of arguing from such facts of organic nature to the special operation of "a superior intelligence"? I can hardly suppose that Mr. Wallace will invoke any such agency for the purpose of explaining the "latent capacities" of the voice of a parrot. Yet, in many respects, these are even more wonderful than those of the human voice, albeit in a wild state they are "never required or used."[1]

Once more, with regard to the naked skin, it seems sufficient to quote the following passage from the first edition of the *Descent of Man*:

"The Rev. T. R. Stebbing, in commenting on this view, remarks, that had Mr. Wallace 'employed his usual ingenuity on the question of man's hairless skin, he might have seen the possibility of its selection through its superior beauty, or the health attaching to superior cleanliness. At any rate it is surprising that he should picture to himself a superior intelligence plucking the hair from the backs of savage men (to whom, according to his own account, it would have been useful and beneficial), in order that the descendants of the poor shorn wretches might, after many deaths from cold and damp in the course of many generations,' have been forced to raise themselves in the scale of civilisation through the practice of various arts, in the manner indicated by Mr. Wallace."[2]

To this it may be added that the chimpanzee "Sally" was largely denuded of hair, especially on the back, or the part of

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[1] For a discussion of this remarkable case, see *Mental Evolution in Animals*, pp. 222–223. It appears to me that if Mr. Wallace's argument from the "latent capacities of the voice of Man" is good for anything, *a fortiori* it must be taken to prove that, in the case of the parrot, "the organ has been prepared in anticipation" of the amusement which the cultivation of its latent capacities arouses in "civilised man."

[2] *Descent of Man*, 1st Ed., Ch. XX. (Trans. Dev. Assoc. for Science, 1890).

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"man's organisation" on which Mr. Wallace lays special stress, as being in this respect out of analogy with other mammalia.[1]

Lastly, touching his statement that the brain of savage man is both quantitatively and qualitatively in advance of his requirements, it is here also sufficient to refer to Darwin's answer, as given in the *Descent of Man*. Mr. Wallace, indeed, ignores this answer in his recent re-publication of the argument; but it is impossible to understand why he should have done so. To me, at all events, it seems that one out of several considerations which Darwin advances is alone sufficient to show the futility of this argument. I allude to the consideration that the power of forming abstract ideas with the complex machinery of language as the vehicle of their expression, is probably of itself enough to account for both the mass and the structure of a savage's brain. But this leads us to the second division of Mr. Wallace's argument, or that derived from the mental endowments of mankind.

Here the peculiarities called into evidence are, "the Mathematical Faculty," "the Artistic Faculties," and "the Moral Sense." With regard to the latter, he avows himself a member of the intuitional school of ethics; but does not prove a very powerful advocate as against the utilitarian.[2]

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[1] The late Professor Mosely informed me that, during his voyage on the *Challenger*, he had seen many men whose backs were well covered with hair.—For an excellent discussion of the whole question, chiefly in the light of embryology, see the paper by Buckman already alluded to, pp. 280–289. Also, for an account of an extraordinary hairy race of men, see *Alone with the Hairy Ainu*, by A. H. Savage Landor, 1893.

[2] E. g. "The special faculties we have been discussing clearly point to the existence in man of something which he has not derived from his animal progenitors —something which we may best refer to as being of a spiritual essence or nature, capable of progressive development under favorable conditions. On the hypothesis of this spiritual nature, superadded to the animal nature of man, we are able to understand much that is otherwise mysterious or unintelligible in regard to him, especially the enormous influence of ideas, principles, and beliefs over his whole life and action. Thus alone can we understand the constancy of the martyr, the unselfishness of the philanthropist, the devotion of the patriot, the enthusiasm of the artist, and the resolute and persevering search of the scientific worker after nature's secrets. Thus we may perceive that the love of truth, the delight in beauty, the passion for justice, and the thrill of exultation with which we hear of any act of courageous self-sacrifice, are the workings within us of a higher nature

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It comes, then, to this. According to Mr. Wallace's eventual conclusion, man is to be separated from the rest of organic nature, and the steady progress of evolution by natural causes is to be regarded as stopped at its final stage, because the human mind presents the faculties of mathematical calculation and æsthetic perception. Surely, on antecedent grounds alone, it must be apparent that there is here no kind of proportion between the conclusion and the *data* from which it is drawn. That we are not confined to any such grounds, I will now try to show.

Let it be remembered, however, that in the following brief criticism I am not concerned with the issue as to whether, or how far, the "faculties" in question have owed their origin or their development to *natural selection*. I am concerned only with the doctrine that in order to account for such and such particular "faculty" of the human mind, some order of causation must be supposed other than what we call natural. I am not a Neo-Darwinist, and so have no desire to make "natural selection" synonymous with "natural causation" throughout the whole domain of life and of mind. And I quite agree with Mr. Wallace that, at any rate, the "æsthetic faculty" cannot conceivably have been produced by natural selection—seeing that it is of no conceivable life-serving value in any of the stages of its growth. Moreover, it appears to me that the same thing has to be said of the play instincts, sense of the ludicrous, and sundry other "faculties" of mind among the lower animals. It being thus understood that I am not differing from Mr. Wallace where

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which has not been developed by means of the struggle for material existence." (*Darwinism*, p. 474.) I have quoted this whole paragraph, because it is so inconsistent with the rest of Mr. Wallace's system that a mere epitome of it might well have been suspected of error. Given an intellectual being, howsoever produced, and what is there "mysterious or unintelligible" in "the enormous influence of ideas, principles, and beliefs over his whole life and action"? Or again, if he be also a social being, what is the relevancy of adducing "the constancy of the martyr," "the unselfishness of the philanthropist," "the devotion of the patriot," "the love of truth," "the passion for justice," "the thrill of exultation when we hear of any act of courageous self-sacrifice," in evidence *against* the law of *utility*, or in order to prove that a "nature" thus endowed has "*not* been developed by means of the struggle for existence," when once this struggle has been transferred from individuals to communities? The whole passage reads like an ironical satire in favor of "Darwinism," rather than a serious argument against it.

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he imposes "limits" on the powers of natural selection, but only where he seems to take for granted that this is the same thing as imposing limits on the powers of natural causation, my criticism is as follows.

In the first place, it is a psychological fallacy to regard the so-called "faculties" of mind as analogous to "organs" of the body. To classify the latter with reference to the functions which they severally perform is to follow a natural method of classification. But it is an artificial method which seeks to partition mental *faculty* into this, that, and the other mental *faculties*. Like all other purely artificial classifications, this one has its practical uses; but, also like them, it is destitute of philosophical meaning. This statement is so well recognised by psychologists that there is no occasion to justify it. But I must remark that any cogency which Mr. Wallace's argument may appear to present, arises from his not having recognised the fact which the statement conveys. For, had he considered the mind as a whole, instead of having contemplated it under the artificial categories of constituent "faculties," he would probably not have laid any such special stress upon some of the latter. In other words, he would have seen that the general development of the human mind as a whole has presumably involved the growth of those conventionally abstracted parts, which he regards as really separate endowments. Or, if he should find it easier to retain the terms of his metaphor, we may answer him by saying that the "faculties" of mind are "correlated," like "organs" of the body; and, therefore, that any general development of the various other "faculties" have presumably entailed a collateral development of the two in question.

Again, in the second place, it would seem that Mr. Wallace has not sufficiently considered the co-operation of other well-known natural causes, which must have materially assisted the survival of the fittest where these two "faculties" are concerned. For, even if we disregard the inherited effects of use—which, however, if entertained as possible in any degree at all, must have here constituted an important factor,—there remain, on the one hand, the

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unquestionable influences of individual education, and, on the other hand, of the selection principle operating in the mind itself.

Taking these two points separately, it is surely sufficiently well known that individual education—or special training, whether of mind or body—usually raises congenital powers of any kind to a more or less considerable level above those of the normal type. In other words, whatever doubt there may be touching the *inherited* effects of use, there can be no question touching the immense *developmental* effects thereof in the individual life-time. Now, the conditions of savage life are not such as lead to any deliberate cultivation of the "faculties," either of the mathematical or æsthetic order. Consequently, as might be expected, we find both of them in what Mr. Wallace regards as but a "latent" stage of development. But in just the same way do we find that the marvellous powers of an acrobat when specially trained from childhood—say to curve his spine backwards until his teeth can bite his heels—are "latent" in all men. Or, more correctly, they are *potential in every child.* So it is with the prodigious muscular development of a trained athlete, and with any number of other cases where either the body or the mind is concerned. Why, then, should Mr. Wallace select the particular instances of the mathematical and æsthetic powers in savages as in any special sense "prophetic" of future development in trained members of civilised races? Although it is true that these "latent capacities and powers are unused by savages," is it not equally true that savages fail to use their latent capacities and powers as tumblers and athletes? Moreover, is it not likewise true that *as* used by savages, or as occurring normally in man, such capacities and powers are no less poorly developed than are those of the "faculties" on which Mr. Wallace lays so much stress? In other words, are not "latent capacities and powers" of all kinds more or less equally in excess of anything that is ever required of them by man in a state of nature? Therefore, if we say that where mathematics and the fine arts are concerned the potential capacities of savage man are in some mystical sense "prophetic" of a Newton or a Beethoven, so in consistency ought we to say that in these same capacities

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we discern a similar prophecy of those other uses of civilised life which we have in a rope-dancer or a clown.

Again, and in addition to this, it should be remembered that, even if we do suppose any prophecy of this kind where the particular capacities in question are concerned, we must clearly extend the reference to the lower animals. Not a few birds display æsthetic feelings in a measure fairly comparable with those of savages; while we know that some animals present the germs of a "faculty" of computation.[1] But it is needless to add, this fact is fatal to Mr. Wallace's argument as I understand it—viz., that the "faculties" in question have been in some special manner communicated by some superior intelligence to *man*.

Once more, it is obviously unfair to select such men as a "Newton, a La Place, a Gauss, or a Cayley" for the purpose of estimating the difference between savages and civilised man in regard to the latter "faculty." These men are the picked mathematicians of centuries. Therefore, they are men who not only enjoyed all the highest possible benefits of individual culture, but likewise those who have been most endowed with mathematical power congenitally. So to speak, they are the best variations in this particular direction which our race is known to have produced. But had such variations arisen among savages, it is sufficiently obvious that they could have come to nothing. Therefore, it is the *normal average* of "mathematical faculty" in civilised man that should be contrasted with that of savage man; and, when due regard is paid to the all-important consideration which immediately follows, I cannot feel that the contrast presents any difficulty to the theory of human evolution by natural causation.

Lastly, the consideration just alluded to is, that civilised man enjoys an advantage over savage man far in advance even of those

[1] See *Proceedings Zoölogical Society*, June 4, 1889, for an account of the performances in this respect of the chimpanzee "Sally." Also, for some remarks on the psychology of the subject, in *Mental Evolution in Man*, p. 215. I should like to take this opportunity of stating that, after the two publications above referred to, this animal's instruction was continued, and that, before her death, her "counting" extended as far as ten. That is to say, any number of straws asked for from one to ten would always be correctly given.

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which arise from a settled state of society, incentives to intellectual training, and so on. This inestimable advantage consists in the art of writing, *and the consequent transmission of the effects of culture from generation to generation.* Quite apart from any question as to the hereditary transmission of acquired characters, we have in this *intellectual* transmission of acquired *experience* a means of accumulative cultivation quite beyond our powers to estimate. For, unlike all other cases where we recognise the great influence of individual use or practice in augmenting congenital "faculties" (such as in the athlete, pianist, etc.), in this case the effects of special cultivation do not end with the individual life, but are carried on and on through successive generations *ad infinitum.* Hence, a civilised man inherits mentally, if not physically, the effects of culture for ages past, and this in whatever direction he may choose to profit therefrom. Moreover—and I deem this an immensely important addition—in this unique department of purely intellectual transmission, a kind of non-physical natural selection is perpetually engaged in producing the best results. For here a struggle for existence is constantly taking place among "ideas," "methods," and so forth, in what may be termed a psychological environment. The less fit are superseded by the more fit, and this not only in the mind of the individual, but, through language and literature, still more in the mind of the race. "A Newton, a La Place, a Gauss, or a Cayley," would all alike have been impossible, but for a previously prolonged course of mental evolution due to the selection principle operating in the region of mathematics, by means of continuous survivals of the best products in successive generations. And, of course, the same remark applies to art in all its branches.[1]

Quitting then the last, and in my opinion the weakest chapter of *Darwinism*, the most important points presented by other portions of this work are—to quote its author's own enumeration of

[1] In Prof. Lloyd Morgan's *Animal Life and Intelligence* there is an admirable discussion on this subject, which has been published since the above was written. The same has to be said of Weismann's essay on music, where much that I have here said is anticipated. With the views and arguments which Mr. Mivart has forcibly set forth I have already dealt to the best of my ability in a work on *Mental Evolution in Man.*

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them—an attempted "proof that all specific characters are (or once have been) either useful in themselves or correlated with useful characters": an attempted "proof that natural selection can, in certain cases, increase the sterility of crosses": an attempted "proof that the effects of use and disuse even if inherited, must be overpowered by natural selection": an attempted proof that the facts of variation in nature are in themselves sufficient to meet the difficulty which arises against the theory of natural selection, as held by him, from the swamping effects of free inter-crossing: and lastly, "a fuller discussion on the color relations of animals, with additional facts and arguments on the origin of sexual differences of color." It will be sufficient here to remark, that in as far as I disagree with Mr. Wallace (and agree with Darwin), on the subject of "sexual differences of color," my reasons for doing so have been already sufficiently stated in Part I. of *Darwin and After Darwin.* But there is much else in his treatment of this subject which appears to me highly valuable, and therefore presenting an admirable contribution to the literature of Darwinism. In particular, it appears to me that the most important of his views in this connexion probably represents the truth—namely, that, among the higher animals, more or less conspicuous peculiarities of color have often been acquired for the purpose of enabling members of the same species quickly and certainly to recognise one another. This theory was first published by Mr. J. E. Todd, in 1888, and therefore but a short time before its re-publication by Mr. Wallace. As his part in the matter has not been sufficiently recognised, I should like to conclude this article by drawing prominent attention to the merits of Mr. Todd's paper. For not only has it the merit of priority, but it deals with the whole subject of "recognition colors"—or, as he calls them, "directive colors"—in a more comprehensive manner than has been done by any of his successors. In particular, he shows that the principle of recognition-marking is not restricted to facilitating sexual intercourse, but extends also to several other matters of importance in the economy of animal life.[1]

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[1] *American Naturalist*, XXII., pp. 201–207.

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Having thus briefly sketched the doctrines of the sundry Post-Darwinian Schools from a general point of view, I shall endeavor in Part II. of *Darwin and After Darwin* to discuss in appropriate detail the questions which have more specially come to the front in the Post-Darwinian period. It can scarcely be said that any one of these questions has arisen altogether *de novo* during this period; for glimmerings, more or less conspicuous, of all are to be met with in the writings of Darwin himself. Nevertheless it is no less true that only after his death have they been lighted up to the full blaze of active discussion.[1] The most important of them are four in number, and it is noteworthy that they are all intimately connected with the great question which Darwin spent the best years of his life in contemplating, and which has therefore, in one form or another, occupied the whole of this article—the question as to whether natural selection has been the sole cause, or but the chief cause of modification.

The four questions above alluded to appertain respectively to heredity, utility, isolation, and physiological selection. Of these the first two will form the subject-matter of my forthcoming volume, while the last two will be dealt with in the final instalment of *Darwin, and After Darwin.*

G. J. ROMANES.

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[1] It is almost needless to say that besides the works mentioned in this article, many others have been added to the literature of Darwinism since Darwin's death. But as none of these profess to contain much that is original, I have not thought it necessary to consider any of them in this merely general review of the period in question.

[Since this note was written and printed the following works have been published to which it does not apply: *Animal Life and Intelligence*, by Prof. Lloyd Morgan; *The Colours of Animals*, by Professor Poulton; *Materials for the Study of Variation*, by Mr. Bateson. All these works are of high value and importance. Special reference should also be made to Professor Weismann's Essays.]

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SCIENCE AND FAITH.

I. MAN AS AN ANIMAL.

IN THE year 1878, in the course of the first Exposition of Anthropological Sciences at Paris, I became engaged in a controversy with a celebrated Dominican, Père Didon, on the irreconcilability of science and faith. In 1893, in a memoir which appeared in *L'Anthropologie*,[1] I broached the conclusion that man as an animal and man as a member of society were contradictory, that society was a compromise between the truths of science and the necessities of practical conduct, and that to establish firmly the foundations of ethics, it was necessary to admit as dogmas, or articles of faith, which should be exempt from discussion, certain principles that were implied in all social solidarity, such as justice, the distinction of good from evil, altruism, etc.

These conclusions were distressing to me. I have not ceased since to ponder on them. I have searched for some property of living beings possessing or not possessing a nervous system that would give body and objective reality to these dogmas. I have reread the beautiful pages of Herbert Spencer and other philosophers on the subject. I have devoted my best attention to Guyau and Fouillée's "ethics without obligation and without sanction." I have read the works of Dr. Paul Carus, his *Problème de la conscience du moi*, which has been translated into French in the Library of Contemporary Philosophy, the lectures which he delivered at the Congress of Religions during the recent World's Fair in Chicago,

[1] Paul Topinard, "Quelques conclusions et applications de l'anthropologie," in *L'Anthropologie*, 1893, pp. 657–696.

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his *Primer of Philosophy*, etc. The doctrine which Dr. Carus upholds in *The Monist* and *The Open Court* is seductive. It may be that a better one cannot be found. It is ingenious and accords perfectly in its premises with the facts of science. But it swerves aside in its applications. The spirit which conceived the first part is not maintained in the second; the seam is visible. Will this doctrine convert the masses, which it is our aim to lead into the ways of righteousness? Will it prove sufficient as a sanction of the moral obligation? That is the question.

We are among scholars. We are seeking in the same paths. We are in accord as to the object aimed at. Let us then be clear.

The first thing requisite is to bring matters scientifically to a head, to look the enemy squarely and fearlessly in the face, and to let the truth stand forth in its full entirety and nakedness. It is necessary, therefore, to recall what we know about man and societies, that is, to ascertain what is the upshot of the final data of the science of anthropology. The field is vast—too vast to be traversed, even hurriedly, in its whole extent. But there are parts of more importance than others, and of these I may be permitted to give a brief recapitulation.

* * *

Anthropology, in its broad sense, comprises everything that relates to man, and is divided into anthropology in its restricted sense, or anthropology proper, and into ethnical anthropology. The former studies man as an animal, first the individual, then the principal varieties called races,[1] and lastly the species in its relation to other species—all three in the double point of view of morphology and biology. The second studies men as associated together in peoples, tribes, civilisations, and societies, and that in all points of view, as to distribution into different epochs, history and prehistory, modes of life, habitat, alimentation, industry, manners and

[1] Races are permanent varieties of the species, I say. They should not be confounded with peoples or with languages. Races belong to the province of the anthropological naturalist, and can be extricated from the peoples among which they are mingled only by the special knowledge and methods of the naturalist. The word should never be used in ethnical anthropology.

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customs, languages, religions, arts and letters, institutions and ideas, morality, etc., and their evolution from the past to the present; it is divided into ethnology[1] and sociology.

I have long admitted a third division of anthropology for moral or psychical man. Reason being the highest attribute of man, it seemed to me expedient to assign to man a place apart, were it only for the purpose of applying here certain methods not employed in the other two divisions. But the elements of which this third division is composed require to be examined alternately in man as an animal and in man as a member of society. In this phase of my scientific ontogeny I said that anthropology had three objects of study, animal man, mental man, and social man. To-day I see drawbacks to this division and reduce the objects of anthropological study to two only: animal man and social man.

Anthropology, in the restricted sense, is the anthropology of Blumenbach and of the French school. It belongs to the department of the naturalist, or of the physician with the training of a naturalist. It thus embraces all that the natural history of an animal involves, and is distinguished by no special feature except the very extensive scope of certain of its chapters. The knowledge which it necessitates is derived from three sources: (1) the knowledge which the naturalist acquires concerning all organised beings, particularly animals, but notably Vertebrates, Mammals, and Primates, and which he applies as his taste dictates to this or to that animal; (2) the knowledge which the physician acquires, anatomy, physiology, pathology, embryogeny, teratology, mesology, etc.; (3) the knowledge which the anthropologist reserves for his own proper domain, and which relates to the two following grand subjects about which all his researches turn:

A. Human races in the present and past, their origin, relationship, and history.

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[1] I should not have employed this word if I were writing for France, because it was wrested from its legitimate meaning sixty years ago by W. Edwards. He took it as synonymous with the natural history of races, whilst it designates the general history of nations.

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B. The human species, its various characters, its place in the zoölogical classifications, its genealogy.

We shall pass over the races and speak only of the species. To be sure, classifications are only "artificial expedients," to use an expression of Lamarck, or "subjective conceptions to which no absolute demarcation corresponds in nature," to use the words of Herbert Spencer. Nevertheless, they express and sum up the state of our knowledge, and that is precisely what we want. Classifications, not systematic but natural, give a succinct tableau of the common characters or resemblances that animals present, whether of the primary, secondary, tertiary, or other order, corresponding to groups more or less circumscribed, called divisions, classes, orders, families, genera, etc.—and of the particular characters or differences which distinguish each of the included divisions of these groups. To give a place to man in the classification means to strike the balance of his resemblances and differences with the different animals, to decide upon the distance which separates him from the nearest members of his special group, and lastly, to assign to him his hierarchical position in the animal scale. This is what we shall now attempt to do.

First of all, man is a Vertebrate, because, like all animals comprised in this division, he possesses an internal skeleton, the fundamental constituent of which is a chain of vertebræ (or better a dorsal cord, the point of departure of this chain) provided at the front and back with costiform arches which separate the body into two cavities, one anterior, for the viscera, and one posterior, for the cerebrospinal system. Secondly, man is a Mammal, because, like all animals of this class, he has breasts, hair, a neck, four members, a corpus callosum, a heart with four chambers, a complete diaphragm, two occipital condyles, etc. Lastly, man is a Primate, because, like all other accredited animals of this order, he possesses a special type of brain characterised by the absence of the limbic lobe of other terrestrial mammals, by a prominent frontal lobe, by a parietal, a temporal, and an occipital lobe, by a peculiar system of convolutions, and by a cerebellum covered by the hemispheres; because he has a type of skull no less special, characterised by the

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rounded form of the occipital part, by developed frontal fossæ, by eye-sockets closed at the back, near to each other, and pointing forwards, by an os planum, by a mandible, of which the two parts are fused at birth, etc.; because he possesses an anterior member more or less adapted for prehension, a fore arm capable of movements of pronation and supination, a hand, that is, long and slender fingers, a thumb relatively short and opposite to the other fingers, a small and exceedingly mobile wrist; because he has three kinds of teeth with omnivorous molars, flat nails on the hands and feet, two pectoral mammæ, a unilocular uterus, a discoid placenta, a simple stomach, etc.

The Primates include the Lemurs, or semi-apes, sketch-plans of the Primates, and transitional links from the Insectivora (which were undoubtedly without placentæ) to the real Apes; the Apes, or Primates proper, comprising the Arctopitheci, a small family belonging to the New World, the Cebidæ or common monkeys of the New World, the Pitheci or tailed monkeys of the Old World, and the Anthropoids, or Apes without tails, also of the Old World.

What position does man occupy in this group of animals? Which does he most resemble? Does his distance from the nearest make of him a suborder, a tribe, a family, or perhaps a genus? Hitherto we have spoken only of the characters which are common to man and to the other animals. We have now to speak of their differences.

These differences in man as compared with the Apes have been sought for with the greatest care in all parts of the body. We no longer live in the time of Galen when to learn the anatomy of man the Barbary ape principally was dissected. We notice to-day the most unobtrusive characters, such as we should never pay attention to, were it not that they concern our own species. It happens thus that the differences in question are exceedingly numerous but reducible to a few of primary importance. In the skull, for example, craniometry furnishes at least twenty, which are reducible to three. In the skeleton, the muscles and the viscera, there are more than thirty worthy of notice, but all reducible to one. Let us examine the most important.

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But first a remark. To determine the distance which separates several species or groups of species, that is, their degree of unlikeness, their mean specific types must be considered, and not, as is sometimes done, their extreme individual variations. By the last method, the characteristic differences are submerged, and in general we arrive at a graduated but continuous series in which the lines of demarcation disappear, as Herbert Spencer has said *à propos* of this question. The method of mean types alone exhibits the intervals sought.

Another remark. To solve our problem we are obliged to proceed analytically, that is, we must take up the characters one by one and construct from their gradations in the different species, a scale which admits of its appropriate conclusions. Now these conclusions are sometimes contradictory. The truth can be extricated only from their combination, otherwise called their synthesis.

The first characters distinguishing man from his nearest animal neighbors, relate to the cerebral nervous system. Let us hurriedly follow its developments. At the bottom of the invertebrate scale a few fibres and nervous cells are discoverable, at first dispersed. Then aggregations of cells or ganglia appear, among which are easily noticeable those consecrated to the special senses, at the point where the cephalic extremity is constituted. In this last place they approach each other in pairs with a tendency to fuse. Thus the brain takes its origin. In the lowest vertebrates it is represented by a succession of swellings or lobes having their seat on the prolongation of the spinal cord. The largest are the olfactory and optical lobes, the smallest are the future hemispheres. Soon the rôles of the parts are reversed, the rudimentary hemispheres grow larger, expand in all directions, cover and envelop the lobes beneath and end at the summit of the scale by constituting alone almost all of the brain. The grey cortical substance, which is the essential part of the brain, finds thus an extensive surface, which ultimately not sufficing for the demands made upon it folds and refolds upon itself and by this ingenious artifice is increased in extent still more. The results are the cerebral convolutions. The folding takes different directions, and affects different types in the different classes of mam-

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mals. In the Primates it grows together with the increase of volume. The hemispheres, divided, as has been said, into four lobes, end at the back by running over the cerebellum, and in front by hanging over the face. The hemispheres efface the last traces of the limbic lobe, and by a final leap attain in man their highest degree of complexity. In this last respect there is only a difference of quantity, which is not striking, between the anthropoids and man. If we place on a table by the side of each other two brains, the one of an orang, for example, and the other of a man, we should recognise the latter, apart from its volume, only by the asymmetry of the lateral convolutions, by their smaller size, as also by their number and by their sinuosities, especially of the third frontal convolution, that of language.

As to volume the difference is striking. The brain of man is larger than that of three large anthropoids, both in relation to volume of body and to volume of skull, and absolutely in that its mean weight is treble that of the anthropoid brain.

Next to the differences between man and animals exhibited by the nervous system, come those which concern the organs of locomotion. All the members are locomotor in their origin; prehension of objects being performed directly with the mouth. From the first steps of Reptiles on solid earth the members are seen to become differentiated in a definite manner. When they creep along the fore members grasp the soil and pull the body, the hind members brace themselves against the soil and push the body. The fore members act as prehensile organs, the hind members as locomotor organs, *par excellence*. Both, thus, acquire distinctive initial characters which they never relinquish. Later, in the Mammals, the adaptation varies with the mode of life, the needs, and the habits. Excepting man and some aquatic species, the mammals are essentially quadrupeds, but in different degrees. In the Marsupials generally, the anterior members are utilised as organs of prehension; among some, the posterior extremities are organised as hands. In the Ungulates, or hoofed animals, the adaptation is exclusively quadruped. In the Unguiculates the anterior members serve accessorily for prehension. In the lower Primates, which are ordinary

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arboricole animals, the necessity of clinging to branches develops the function of prehension in the anterior members, or in some species in the posterior members. In the middle Primates, or Monkeys, the adaptation to arboreal life is perfected and increased in all four members. They are at once quadrupeds and quadrumanes; the entire body is in unison; they are expert gymnasts, running from limb to limb, shooting backwards and forwards, and hanging downwards by their four extremities and by their tail, which in Cebidæ is prehensile. Their forehead is the most advanced product of adaptation in this direction which the animal scale has yet shown. Their posterior hand is still a foot, but modified in the direction of a hand. In the Anthropoids the same is also true, except that the posterior hand resembles more a pair of pincers with curved tongs, and that the tail has disappeared. In man, adaptation has restored the original character of the four members. The anterior members have become fixed in the direction begun in the monkeys; the posterior members have abandoned absolutely that tendency and are entirely adapted to the locomotor function. Man is the only perfect bipedal adaptation, excepting birds, that the animal kingdom presents, just as the Cervidæ are, not the only, but the most perfect adaptation of the quadruped attitude and gait.[1]

This brings us to the second group of characters which distinguish man from monkeys—namely, to the erect attitude which is peculiar to man. Monkeys, we have just said, are arboricole animals, marvellously adapted to their mode of existence. Their body is light, their vertebral column is supple, their members are long, slender, and mobile, their four extremities furnished with hands. On the ground they walk awkwardly on all fours. They stand erect sometimes by seeking a point of support with their fore hands on a tree or a rock. Some Pitheci and Cebidæ even show in their viscera indications of adaptation to this last occasional attitude. Some Cynocephali show traces of it also in the vertebral column. In the Anthropoids, two of which have a comparatively heavy gait, walk-

[1] See P. Topinard, *L'homme dans la nature*, Chap. VIII., Paris, 1893. Bibliothèque Scientifique Internationale. F. Alcan.

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ing on the ground is more frequent. They walk in a half-bent position, supporting themselves on the dorsal surface of the fingers and the outer edges of the feet. Do they straighten up often? In any case, the adaptation to this straightening up has produced a marked advance in the viscera, in the vertebral column, and particularly in the pelvis. As an offset, the head and the lower members have made none. In the pelvis the anthropoid approaches very near to man. In the foot he is radically different from man; in fact, he is more simian, more monkey-like, than the other Apes. The foot, the calcaneum, and the astragalus fold inwards upon the tibia, so that the sole of the foot can apply itself laterally to the trunk of a tree in climbing; the first toe, which is short in comparison with the other toes, but slender, is widely separated from the others, and plays less the part of a finger with the power to oppose the others, than that of a pincers enveloping the limb and running to meet there the other fingers, which are long and recurved.

Man himself is terricole in habits, with vertical carriage, and walking on two feet. In all parts of his body he is marvellously adapted to this mode of life. His head rests in equilibrium upon his vertebral column without effort. He has not the large posterior cervical ligament which prevents the head from falling forwards in other mammals. His vertebral column is solid, with a double dorso-lumbar curvature, and is larger in the lumbar region, so as to fit firmly into an enlarged pelvis. Everything in the lower members is arranged to support the weight of the body. The tibio-tarsal mortise permits only exact movements of extension and flexion. All the bones of the tarsus are heavy and strong. The axis of the tibia, the vertical axis of the astragalus, the antero-posterior axis of the calcaneum, the axis of the foot, are all in the same plane. The first toe is large, almost of the same length as the second, and parallel to it. Its cuneo-metatarsal articulation is an arthrodia which permits neither adduction nor abduction. The sole of the foot is arched and rests solidly on the ground at three points. The foot of man is a masterpiece of adaptiveness to the vertical attitude, and the opposite of that presented by the Monkeys: Pitheci, Cebidæ, or Anthropoids.

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The characters derived from the differences of attitude furnish, accordingly, contradictory arguments; one group putting man in the same family with the Anthropoids (the pelvis, vertebral column, and viscera), the other placing him in a different order (the foot). In my opinion the latter factor is more potent.

The other differences to be noted are not of such great importance. They are such as come from the gradual perfection which takes place in the adaptation of the upper members to the function of prehension, commenced in the Lemurs and even in the Reptiles, attaining a high stage in the Monkeys, and gradually specialised in a different direction in man. The whole member takes part in the action here and not, as is commonly believed, its terminal segment only. In monkeys the fingers are slender, long, and recurved; the thumb is short and also slender; the trapezo-metacarpal articulation which supports it permits thus the two movements of oblique adduction and abduction, or of opposition. Nevertheless, this articulation in its movements is rude. It is a kind of tongs with curved branches, an organ made for encircling the limb of a tree, and only secondarily to grasp small objects and break them into pieces. On the other hand, the radius is capable of a movement of rotation on the cubit of about eighty degrees, and the articulation of the shoulder is very mobile. In the Anthropoids the rotation of the radius rises to one hundred and sixty degrees about, and the scapulo-humeral articulation increases still more in mobility. But the hand undergoes no improvement. In man there is no notable change either in the hand or in the rest of the member, but all has become pronounced and has more precision; a certain simian fold of the palm of the hand has disappeared showing a marked independence of the index finger. The hand is an organ of prehension, an organ of exploration and of touch, and also an instrument.

It has been said that man alone possesses a true hand and that owing to it he can manufacture for himself tools. This is an error. The differences which it presents as compared with the hand of the most favored monkey in this respect, are only differences of kind. The faculty which enabled our prehistoric ancestors to manufacture the hatchets of St. Archeul, then to discover cleavage by repercus-

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sion and the art of edge-making, was less the hand than the intelligence which directed the hand. The great dexterity which the human hand has acquired, for example, in playing on the violin or the piano or in the adjustment of the screw of a microscope, is the fruit of experience and intelligence combined. In fine, the point of departure of the hand was an adaptation to arboreal life, its point of arrival an adaptation to intellectual life.

The differences which are now to be noticed are more decisive. They relate to the disappearance of the snout, the consequent reduction of the nasal fossæ, accompanied by the effacement of the last vestiges of the limbic lobe, and especially to the reduction of the maxillary apparatus, caused no doubt by the transference and localisation in the hands of the function of prehension, before divided between the hands and the mouth. The orthognathism of man's face, which stands in such marked contrast to the frightfully bestial face of the Anthropoids, is the result of this.

We have reserved for the last the group of differences presented by the other parts of the skull, because they result from the association of three orders of adaptations or influences on which a preliminary word is necessary, viz.:

1. The volume of the brain which, in its increase from the Anthropoids, or some analogous type, to man, exerts a strong pressure on all sides, elevates the vault of the skull, depresses its base, tips the frontal bone forwards, the occipital bone backwards, and adapts everything to its wants; (2) the adaptation to the bipedal attitude, which takes place by the overthrow backwards of the occipital bone, above mentioned, where the occipital foramen, which in the Monkeys and other mammals is at the back of the base of the skull and in man is in the centre of it, is transported from backwards forwards; (3) atrophy of the facial part of the skull of which we have just spoken. One of the consequences of this atrophy, associated with the development of the anterior lobe of the brain and of its frontal compartment, is the formation of the forehead, one of the distinctive traits of man.[1]

[1] At the other extremity of the face the chin also is a human character.

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I have set forth at length the mechanism of this transformation of the animal skull into the human skull in *L'Anthropologie.*[1]

All in all, then, we are led by our rapid review of the craniological and craniometrical characters to the following conclusion. There exist among the Primates three widely different types of skull; first, that of the Lemurs, which is that of the other mammals generally; secondly, that of the Monkeys, both of the Old and of the New World, including the Anthropoids,—a type of skull which is intermediate between that of the Lemurs and that of man; and thirdly, a type which is *sui generis*—that of man. Accordingly, an abyss which nothing fills separates man from the Monkeys. On the other hand, here and there, in isolated characters, some Monkeys, now a Cebus, now a Pithecus, now an Anthropoid, and usually always the young, present some point of resemblance with man.

There are still other differences to be noted, but of less interest. Thus, we have characters of growth; for example, sutures which close earlier or later. We have also simplifications of organs or secondary harmonical adaptations, such as the decrease of the usual number of nineteen vertebræ in Monkeys to seventeen in man; the arrangement of the summit of the sacrum and of the coccyx in consequence of the disappearance of the tail both in the Anthropoids and in man; the atrophy of the laryngal sacs, which have become unessential after the acquisition of language; the disappearance of the auditory bulla of Lemurs, progressive in the Monkeys and the Anthropoids and replaced in man by the mastoid cells, etc., etc. Other differences are the particular adaptations to the life and the new habits of man, such as certain modifications of the condyles and of the articular surface of the mandible, absolutely acquired, and certain characters in the structure of the molar teeth, on which I must dwell.

I wish to speak, not of the canine teeth, which are less voluminous in man, but of the tubercules or cusps of the superior and inferior molars. Like the pelvis and the union of the sacrum and

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[1] P. Topinard. "La transformation du crâne animal en crâne humain," in *L'Anthropologie.* 1891. P. 649.

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the coccyx, the fundamental types of these molars join man and the Anthropoids together in a common group, and distinguish them conjointly from the Pitheci, in which the corresponding types are entirely different. Their construction is as follows: Above we have a quadricuspidate type with an oblique crest separating the fourth or postero-interior tubercle, from the three others. Below we have a quinquecuspidate type, arched, with three external and two internal tubercules. But here is the extraordinary fact. In man and not in the Anthropoids, two new types of which we can follow the gradations, take the place of these very frequently: one above tricuspidate by the disappearance of the fourth tubercle, the other below quadricuspidate like a cross. Professor Cope, who has studied the first of these accidental types, the tricuspidate, sees in it a reversion to the lemurine type. For my part I take it to be an adaptation to the alimentary system of man, a perfective character in process of formation, one of the traits of the man of the future. Even in the absence of other proofs, and others do exist, this fact shows that man is still in process of evolution, and that if he is progressing by his brain and its functions, he is also advancing and being transformed in other parts.

But I must hasten to conclude. Of the differences we have discovered, some are equivalent to intervals of an order or suborder, others to intervals of a family, others to intervals of a genus. It is incumbent upon us to weigh the physiological value of each, to set them off one against the other, and to obtain their approximate mean. The brain and the skull are of most importance; the attitude comes next, the hand, the teeth, the muscles, and viscera come last.

Briefly, then, my conclusion is: (1) that the Cebidæ, the Pitheci, and the Anthropoids, all of them arboricole creatures by equal rights, cannot be separated from one another, but that the same name of Monkeys properly applies to them as much as does that of "quadrumane" given by Cuvier; (2) that in this group the Anthropoids have reached the highest stage of evolution and are consequently less remote from man; (3) that the distance of the monkey group from man is on an average greater than that which

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commonly separates families and *a fortiori* genera, and less than that which separates orders; (4) that this distance is about equal to that which separates the Monkeys from the Lemurs; (5) that man, therefore, forms a suborder in the order of Primates as shown in the following table:

ORDER OF PRIMATES.

First suborder: Man.

Second suborder: Monkeys
- First family: Anthropoids.
- Second family: Pithecidæ.
- Third family: Cebidæ.
- Fourth family: Arctopithecidæ.

Third suborder: Lemurs.

To sum up, the Lemurs of this classification are simply the starting-point of the Primates. The Monkeys are animals adapted to arboreal life and perfected to this end. Man is an animal adapted to intellectual life and perfected towards this end.

Is it a consequence of this schematic statement of the intervals separating *present* man from the other *present* Primates that man is descended from the highest Monkeys, the Anthropoids? The question is prejudged, but not settled. Suppose we have two phyla or types. Both become differentiated into secondary branches or types. The latter come into different environments and different modes of life; they adapt themselves thereto and evolve separately. Some diverge from each other, others approach nearer to each other, others go along side by side. This is what is called resemblance by convergence and difference by divergence. Therefore resemblance and dissimilarity are not a criterion. This same view is applicable to human races. Two or three may have originated apart at remote epochs and have come to resemble each other by convergence. The unity or the plurality of the origin of the human races is not a solved question.

Be that as it may, in the hypothesis of a single origin two opinions are tenable. One, which Professor Cope defends, is based upon palæontological evidence, and makes man descend directly from certain Eocene Lemurs, through a series of precursors doubtless, who have lifted him up to his present state, but of which we have

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as yet no direct evidence. The other, which is based upon existing species, makes man descend directly from the Pitheci or the Cebidæ, or, which is more probable, from the Anthropoids.

This is what I wrote on the subject three years ago, with regard to one character. I modify the phraseology slightly: "From my studies on the cusps of the molars and premolars of Primates I am disposed to conclude that the type of Maki and Tarsius, the first group of Lemurs, has engendered on the one hand that of Lori, Propithecus, and Galago, the second group of Lemurs, and on the other hand that of Indri, the third group of Lemurs; that the type of Lori, etc., has given the Cebidæ, and that of Indri the Pitheci, from which would have issued the common fundamental type of Anthropoids and of man."[1]

What is certain is, that man by all of his characters is descended from some Primate. The brain, the hand, and all that relates to his way of standing, with the exception of the foot, are proofs of it.

But from what branch and in what epoch was the initial shoot thrown off? That is a question which it is wise to reserve for a future time. We should not forget that families and genera of Primates must have existed which have now utterly disappeared, and that the present types may be only descendants of others of which we know nothing.

The comparison between man and the other animals is not restricted to morphological characters. If anthropology gives them the preference, the reason is that they can be got at, analysed, and weighed with great precision, and that they faithfully reflect the functional characters, in virtue of the principle that the "function creates the organ." The proper complement of the preceding review, therefore, would be the examination of the physiological characters and particularly of those which relate to the really characteristic organ of man—his psychological characters. But that would carry us too far.

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[1] P. Topinard, "De l'évolution des molaires et premolaires chez l'homme," in *L'Anthropologie*, 1892, p. 709.

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We should have to show, if we entered on this subject, that man has the same functions as animals, slightly modified here and there, the same general needs, the same modes of satisfying them, the same sentiments, desires, impulses, and motives, the same reflex actions, with or without the intervention of the sensorium. We should have to show the psychical faculties that are brought into play between sensation and action, isolated and rudimentary in this or that lower or higher animal, less isolated and more marked in others, forming associations in greater or less numbers in one class, and attaining a remarkable degree of development in another, as in the elephant, the dog, and the ape, but arriving at their highest degree of differentiation and complexity in man when the volume of the brain and its convolutions have reached their maximum. We should have to show in these animals the powers of curiosity, attention, observation, reflexion, determination, the sense for cause and effect, memory, and incontestably ideas, for which only the formula is lacking. The studies which have been pursued on this subject in England for many years teem with examples. It would be our task to show in the Apes malice, imitation, the need of play, the spirit of examination, of sympathy, of defiance, the need of talking, of hearing and being heard, the sense for assistance in raising a large stone or in crossing a river, the sense of mutual understanding for making forays or for self-defence, the sense of common utility in disposing sentinels, who are punished when they permit the band to be surprised, etc. Is there reason to be astonished if one of these animals, having acquired by dint of hard efforts articulate language which helps him to fix his memories and ideas and simplifies these operations, or by having become gradually more precise in his acts of reason, more careful in his acts of will, more highly conscious of himself, more inventive in satisfying his daily needs,—is it to be wondered at that he should have created for himself new and peculiar needs, even physical in character, and that little by little he should have lifted himself up to the level of the æsthetic sense, the spirit of philosophical inquiry, and the love of truth?

True, the volume of the brain and its convolutions are far from explaining all this. But there are other morphological factors of

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mental power: for example, the number, size, and relation of the cerebral cells, and particularly their intrinsic qualities, which still vary so much with individuals that, in our species, a scale running from ten to a thousand, I should say, could be established for them. Think of the psychological difference between the extinct primitive races and the higher races of to-day, and in these last between men who think and act in a totally vegetative fashion, and the leading intellects of the nineteenth century!

Finally, from the morphological characters which we have summarised, and the psychological characters which we have alluded to, this fundamental truth emerges, which must be distinctly emphasised: that man, perfect as he may appear to us, is still not a being apart in nature, but that he is by his whole organisation continuous with the other zoölogical species, that he is connected with them by a multitude of characters, if not by all, and that the differences are only relative differences of degree in an evolution in the same direction, augmentations and diminutions of organs or of parts of organs more or less utilised, modifications of development, primary adaptations to new habits and modes of life, secondary harmonical adaptations, etc. It is that man is an animal by the same right as every other vertebrate, mammal, and primate, and that anthropology properly so called is merely a chapter of zoölogy.

No, man is not a creature apart in creation, and it is rather a concession to the spirit of the times than a protest against the idea of our animality, that some naturalists have proposed to place apart all that concerns the intellect, and make of man a fourth kingdom—the human kingdom. De Quatrefages, who advanced this view after the precedent of Isidore Geoffroy St. Hilaire, averred none the less that "man was only an animal, nothing but an animal"—the rational animal of Aristotle and Linnæus, Franklin's tool-making animal.

Certainly, man has been favored by evolution. The organ which alone really characterises him appears from its first progress in the fishes to have been predestined for its future rôle. In the birds the hemispheres have already much importance, but their development is arrested. In the various orders of mammals, the

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brain has more progress to show, but does not go so far as to overshadow adaptations in other directions. Evolution furnishes here various types, all of them highly harmonious and highly adapted to the habits, but relating to muscular force, rapidity of progression, or elegance of form. In the elephant the cerebral organ and its faculties attain a certain superiority, but the enormous size of the animal and the exigencies attending on the needs of its tremendous body prevent its advancing beyond this stage. In the order of the Primates alone, evolution, modest in its beginnings but always properly directed, takes a happy leap and attains its highest stage in man. But the favored lot of man, that good luck of which the acquisition of language was certainly the determining cause, has not at all deprived him of his animality.

Whatever may be said to the contrary, man forms an integral part of that great tree, which took its birth untold centuries ago in the moners, which grew and waxed great throughout the ages, and which gave out the boughs called Worms and Crustacea, Reptiles and Mammals, and those others called Carnivora and Primates, from which have issued so many innumerable branches, among them man. As Monism would have it, this tree is one and continuous in all its parts. Some of its branches are descendent, others ascendent, others parallel or divergent (retrograde, progressive, parallel, and divergent evolution). Many have vegetated, or have arrived at the goal of their evolution,—or of their potencies, as we might say, —and have died, leaving behind them no trace. Many have survived without notable alteration, or have perfected themselves and multiplied.

The extinct and now existing species are the extremities of these boughs and branches at the different epochs of the world. Man is merely one of them, having appeared in the Pliocene or Quaternary epoch at the summit of some ascending branch. All these species have thus the same origin, at the expense of previously existing species; all have risen by a similar mechanism, have evolved according to the same laws, and have, or will have, the same destinies: to bear witness to the splendor of nature and to disappear, leaving or not leaving a posterity.

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I shall sum up these laws or factors of evolution, as follows:

1. The law of spontaneous expansion or proliferation of living matter, first cause of evolution.

2. The law of spontaneous variation of living matter; whence result, with the concurrence of other laws, the multiplication and differentiation of forms, the division and specialisation of labor.

3. The law of reaction of living matter (irritable or sensible) in the presence of external or internal stimuli; whence results the law of conformity of organs to their ends or adaptation to the environment and conditions of life.

4. The law of heredity or of resemblance; whence result, with the concurrence of favorable circumstances, the accumulation and fixation of habits and of characters insensibly developed.

5. The law of the survival of the best equipped and the best adapted.

This evolution is effected through individuals and is furthered by their free competition, their struggle against the environments, circumstances, and conditions of existence. Those most favored by some spontaneous variation, those which know best how to utilise their advantages, which know best how to conform to circumstances, the best adapted and strongest, the nimblest, those most obedient to the injunctions of nature, survive and multiply.

This struggle operates only indirectly among species, although the general result of it is the modification of their type; it operates through individuals. It is they to which this or that variation, this or that adaptation, this or that particular circumstance gives survival and predominance. The instinct of conservation, the necessity of satisfying personal needs, the desire to enjoy life to the full, all exalts individuality. For the individual the world is what he perceives—his series of impressions from his earliest infancy, the memory of his acts, of his struggles, and of his sufferings. His sensorium is the focus in which all is gathered. He is perforce subjective. He is by sensibility and by logic egocentric. *I* first, *others* afterwards. What touches him has his first consideration; what touches others has it not till he is moved to it by impulses, by interest, or by pleasure. If others succumb it is a void for him; if

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they suffer he attempts to realise their sufferings, shares them, and will even seek to assuage them, often with the ulterior thought that in similar circumstances they will render to him a like favor. If he makes sacrifices, if he loves his companion, if he takes care of his children, he is recompensed for it by the pleasure which he derives therefrom. The more powerful his individuality is, the more powerful is he. The more energy the individual has, the more he affirms himself, the more his life is fulfilled, the happier he is, and the more he shares and assists in the progress of the group to which he belongs.

There are, moreover, two beings in the individual: one, the initiative element, which reasons, wills, and is the fruit of his personal education; the other, the routine element, which is the product of habits acquired by his ancestors, repeated and established by accumulated heredity—habits of family, race, species—organic, motor, and psychical habits. To the last are due the greatest number of the acts of life, our impulses and so-called innate ideas; the first intervenes only occasionally. As I stated in my memoir of 1893 above cited, as Dr. Paul Carus has well expounded in his book *Le problème de la conscience du moi*, and as the majority of physiologists to-day admit, all acts are more or less reflex and co-ordinated beforehand for every aim that is to be attained. The centre of reflex action in the vertebrates is in the spinal cord or in its intracerebral prolongation. In one category of acts an external or internal peripheral impression is the origin of the action; in a second category the excitation comes from the brain and is a sensation or a sentiment, in both cases unconscious or obscurely conscious; in a third, the excitation still comes from the brain but the sensation or the sentiment is entirely conscious, gives rise to a ratiocination, a decision, a given order. The two first categories, accordingly, are more or less automatic, the second being so both by the act and by the incitation. They answer to what are called instincts. These may be divided into instinctive sentiments and instinctive acts, and have as common characters on the one hand production without the intervention of reflective volition, and on the other ancestral origin.

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Now instincts are the rule in animals and the commonest case in man. It is they that control individualism, that bring back incessantly and unconsciously to man his antecedents, that have as their object what is useful and as their *raison d'être* submission to the exigencies of struggle and to the higher laws of nature. Is the third category of acts, those which take place as the result of deliberation, commoner? Do they carry with them a vestige of altruism? Are they able in certain circumstances to modify or to annul the instincts? These are questions which we cannot examine without encroaching on the subject of social man, which lies beyond our present task.

Anthropology, in fine, as long as it does not occupy itself with peoples, civilisations, and social constitutions, discovers in man an animal only, to which it applies the general truths which natural history and particularly zoölogy teach it. For anthropology there exist only differences of form and degree between invertebrates and vertebrates, and between the different classes, orders, families, and species of these. The laws which control one rule the others. The mechanisms, theories, and doctrines which apply to animals apply to man, and *vice versa*. As they have the same substance and are of the same origin, so they have the same destiny. From the irritability of a moner to the sensibility of a mollusk endowed with a nervous system; from the sensibility of an insect possessing the rudiment of a brain to the sensibility of the horse, of the ape, or of man, who is provided with a centralised brain with highly differentiated sensibilities, anthropology sees degrees only. From the consciousness entirely mechanical of the moner, distinguishing what is beneficial from what is injurious to it, to the rudimentary consciousness of the fish or the reptile, to the consciousness of the dog or the elephant, and lastly, of man, it still sees only degrees. A professor in a Catholic university, whose name I may withhold, conceded, in conversation with me one day, the doctrine of transformism. "Your doctrine does not disturb in the least the teachings of the Church," he said; "we will give you the body if you will leave us the soul." "Very well," I answered, "but what do you understand by the soul? Do you admit its existence in animals?" "I do," he replied,

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"but as a *less developed* soul." That professor was an intelligent man. Such is, in fact, the soul in man; such it is in different degrees of evolution in animals. What is true of man is true of animals, and *vice versa*.

There are two methods of considering nature—one from our own or the human point of view, and the other from the point of view of Nature herself. For Nature, the spectacle which we offer is that of a busy hill of ants which swarm hither and thither with no aim beyond their present life. For Nature, the species succeed each other with no other motive than to bear witness to their marvellous proliferation. For Nature, everything that *can* take place in her broad bosom *does* take place; the elements combine, dissociate, meet again, forms succeed forms, disintegration follows integration, equilibrium is fleeting, there is no end, the movement is perpetual. Man in this whirlpool, like all the rest, is but a grain of sand; he has to think only of himself. He may fashion for himself ideals, he may assign a goal to his progress, he may impose a programme on his beliefs, he may close his eyes to reality. Well and good! But the thinkers that exercise their ingenuity in adapting him to the conditions of his existence, in creating for him a world of his own, in laying down the rules for his conduct, and in seeking foundations for it least open to attack, must not forget that his only cherished aim is his own happiness.

PAUL TOPINARD.

PARIS, FRANCE.

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CRIMINAL ANTHROPOLOGY APPLIED TO PEDAGOGY.[1]

NOTHING vexes me more than to have to hear or to deliver lectures where the speaker talks from vanity, while the public listens from complacency or politeness, and either learns nothing, or remembers nothing of what is learned. On the present occasion, however, I have accepted my invitation without misgiving. In fact, I should have sought the privilege myself, without your asking; for I believe that some practical applications of criminal anthropology to pedagogy are so strikingly evident and important that if popularised among teachers they will have the power to bring about a genuine revolution in the prophylaxis of crime. As you know, a science exists which by the help of very simple instruments, such as balances, rods, dynamometers, spirometers, craniometers, etc., measures the length of the human body, the length of the arms, the probable capacity of the cranium (calculated from the circumference, the longitudinal curve, the transversal curve of the head, and the two diameters), the length and breadth of the head, the respiratory capacity, or quantity of air that enters into the lungs (spirometry), and the strength of each of the two hands or of the two together (dynamometry). Now these measures vary remarkably from childhood to maturity, and values have been established for these variations, which you may study in the accompanying table, drawn up for the average of the two sexes.

If a distinction is made between the sexes, it will be discovered that weight, stature, and even cranial capacity are almost equal and

[1] A lecture delivered before the teachers of Turin.

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even more developed in females prior to the age of puberty; but from that time on the male exceeds in strength and spirometric capacity. But anthropology also studies a series of anomalies presented by the heads and faces of men.

Capacity. First let us seek an approximate estimate of the quantity of brain contained in the skull. There is a method quite approximate of determining the internal capacity of the cranial case. It is obtained from the sum of the cranial circumference plus the

AGE.	HEIGHT.	WEIGHT.	CIRCUMFERENCE OF THE SKULL.	MUSCULAR FORCE.	VITAL CAPACITY.
1	0·60	9	400		
2	0·70	11	455		
3	0·79	12		11	
4	0·97	14		17	
5	1·03	15		19	
6	1·06	17		22	
7	1·14	19	470	25	845
8	1·15	20	475	34	1050
9	1·20	22		40	1210
10	1·26	24		46	1430
11	1·28	27	445	58	1500
12	1·32	29		64	1800
13	1·37	34	526	82	1400
14	1·40	38		88	2100
15	1·49	43		106	2400
16	1·51	49		112	2030
17	1·52	52		118	3060
18	1·54	57		122	3200
19	1·56	60		129	3250

longitudinal curve, plus the transversal curve, plus the longitudinal diameter, plus the lateral diameter. On an average, the sum of such measurements gives results varying from 1480 to 1540 cubic centimetres. Compared with the true weight of the brain this method gives an error of about a hundred cubic centimetres, not counting the errors due to sclerosis, or hardening, so common in the skulls of insane people. Of this defect we have the following different forms:

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1. *Macrocephaly*, the skull too voluminous, generally inclined to be round. Capacity more than 1800–1900 cubic centimetres.

2. *Microcephaly*, the skull unduly small, especially in the forehead. Capacity less than 1000 cubic centimetres.

3. *Scaphocephaly*, the skull shaped like a roof or the keel of a ship along the median anteroposterior direction, with forehead and occiput prominent, parietals quite narrow, form elongated, sometimes with extreme dolichocephaly. When these pathological characteristics are slight, the skull is called scaphoid or subscaphoid.

4. *Plagiocephaly*. A certain asymmetry exists in all skulls, but the exaggerated asymmetry of one side (plagiocephaly) constitutes one of the special characteristics of lunatics, especially epileptics.

5. *Trochocephaly*, the skull ultra-brachycephalic through exaggerated development of the transverse diameter corresponding to the temperofronto-parietal region (pterion).

6. *Platycephaly*, the skull with the top flattened and the vertex depressed.

7. *Clinocephaly*, cymbocephaly, the skull has the shape of a saddle, on account of the remarkable depression of the bregmatic region.

8. *Trigonocephaly*, the skull in subtriangular outlines, on account of the pointedness of the frontal region and the breadth of the two parietal fossæ.

9. *Eurycephaly*, the head with the skull narrow, almost always hypsicephalic, and with the face too broad; this is the exaggeration of the eurygnathism or broadened face of the Mongolian race.

10. *Hyperorthognathism*, the skull with the forehead pushed forward by the advance of the glabellum and the face; this deformity, generally caused by hydrocephaly, exaggerates the infantile type of the forehead, and the orthognathism or oval face with vertical maxilla of the Caucasian races.

But no knowledge of the sensory life of man is afforded by these data. We have, however, a means of studying the rapidity of a man's perception by means of Hipp's chronoscope; we can measure to the fraction of a volt the varying degrees of his general or dolorific sensibility by means of another special instrument, or more

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roughly by means of the *Schlitteninductorium* of Du Bois-Reymond, counting as the measure of pain or of general sensibility the number of degrees the two bobbins of the machine stand apart. This is the first algometer; it was introduced by me into science, and has been very useful in psychopathology. The distance apart of the two bobbins expressed in millimetres indicates the degree of intensity of the current and represents approximately also the degree of general or dolorific sensibility. Finally, a very simple instrument that any one can make is Weber's æsthesiometer, composed of two blunted points that are brought together or separated along a graduated rod, and whose distance apart measures the delicacy of the touch.

We have finally the campimeter to measure the area of the field of vision; and graduated solutions of saccharine and strychnine, and of aromatic essence of cloves, for measuring the senses of taste and smell.

APPLICATIONS.

But you will ask me what the use is of all these measurements. Gentlemen, they serve an important purpose in theoretical pedagogy, which every year is feeling more deeply the need of supporting itself on anthropology, and has already learned from it new and highly practical methods for the education of the youth. But it is not of this that I wish to speak, but of a very important phenomenon connected with the origin of crime.

You know that one of the most important discoveries of my school is that in the child up to a certain age are manifested the saddest tendencies of the criminal man. The germs of delinquency and of criminality are found normally even in the first periods of human life. Pérez has demonstrated the frequency and the precocity of anger in children. In the first two months the child manifests by movements of the eyebrows and of the hands real fits of rage when one tries to bathe it or seeks to take something away from it. At the age of a year it goes so far in its anger as to strike people; it breaks dishes, and throws them against those who do not act as it wishes, precisely as savages do.

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Certain children, says Moreau (*De l'homicide chez les enfants*, 1882), cannot be kept waiting a moment for a thing they want without getting into an extremely violent passion, making weapons of whatever comes to hand, and breaking everything they can lay hold of, when they find their revengeful attempts impotent. These cases demonstrate the frequency and precocity of instinct and of revenge among infants. Even at the age of seven or eight months a child may be seen scratching the nurse when she tries to take away the breast from him, and striking back when hit. A child somewhat hydrocephalic, of slow development and understanding, became irritated at the slightest admonition or punishment, and this continued up to the age of six years. If he could strike the one who irritated him he quieted down; if not, he continued to shriek, and bit his hands with a gesture which we see repeated by caged bears when they cannot revenge themselves for threats made them.

Montaigne has said that lying and obstinacy grow in children just as their body does. All children, writes Boudin, are liars, but especially foundlings, who tell lies for fun. Pérez admits the truth of this statement, and adduces as first cause the freedom we take in deceiving children, even from the first months, in order to quiet them, wash them, and so on. Children lie in order to be allowed what has been forbidden them; often to avoid a reproof by not seeming to deserve it. A three-year-old girl, of wealthy parents and abundantly nourished, whose mother had naturally forbidden her to ask for additional food, requested another lady to give her something to eat, as she had had no food lately, and her mother would give her none. This child is also ambitious of being well dressed, and once told her mother that the lady upstairs had taunted her with not being decently dressed. Yet this was not true. They go so far even as to vilify their own brothers and sisters, and accuse them of imaginary crimes. One little girl, of good parents, smeared herself with carmine and accused her nurse of having wounded her. But the analysis of the red liquid revealed the falsehood.

The moral sense is certainly wanting in children in the first months or even the first years of life. For them, right and wrong

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are what is permitted or forbidden by the father or mother, but not once do they perceive independently that a thing is wrong. Once a child of four years who had told lies was punished by his mother by being shut up in the cellar. On the way to the place of punishment he said to her: "But I deserve a good deal worse." But when punished by his grandmother by being simply sent into a dark room, he could not endure it, he considered it an injustice and kept crying out.

"This age is without pity," said La Fontaine, faithful portrayer of nature. Cruelty, in fact, is one of the common characteristics of children. Says Broussais (*Irritation et folie*, page 20), "There is scarcely a child who does not abuse his power over those who are weaker than he." Such is the first impulse, but the cries of the victim check him unless he is born to ferocity, until a new instinctive impulse leads him to commit a new abuse. In general he prefers wrong to right; he is cruel rather than good because he thus feels a greater emotion and can feel his own unlimited power, and therefore he is seen to break inanimate objects with delight. He delights in torturing animals, in drowning flies, he beats the dog, he smothers his bird; sometimes he pours melted wax over beetles to dress them like soldiers, and thus prolong their agony.

Even that fundamental principle of megalomania and of criminality which is excessive vanity, self-absorption, is very great in children. In two families in which the principles of equality are maintained by the parents, the children even at three years of age observe the pretended artificial distinctions of social classes and treat with haughtiness the poor, and with deference the children of their own age whose parents are rich or titled. The same thing, for that matter, is also seen in animals; for instance, in the watch-dog that barks at persons in shabby clothes. All children, from the age of seven or eight months, like to show off their new shoes or hats, and get angry when they are taken off. Many children, even those who afterwards show little intellect and slight precocity, at nine or ten months of age are wont to cry if they are not dressed in some particular pretty gown; especially does this passion extend to red shoes.

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One who lives among the upper classes has no idea of the passion babies have for alcoholic liquor, but among the lower classes it is only too common a thing to see even sucking babes drink wine and liquors with wonderful delight, and to see parents enjoy seeing them get drunk. Nor do we find lacking in early years, even at the age of three or four, obscene tendencies, though limited by incomplete development.

Now when the child becomes a youth, largely through the training of his parents and of the school, still more so by nature itself, when inclined to the good, all this criminality disappears, just as in the fully developed fœtus the traces of the lower animals gradually disappear which are so conspicuous in the first months of the fœtal life; we have a genuine ethical evolution corresponding to the physical evolution. But in some unfortunates this evolution does not take place, just as in physical monsters there is arrest of physical development or of fœtal evolution, and then the criminal tendencies become more marked than in the majority of youths, often breaking out in terrible atrocities and obscenities, and persisting ever after.

A magistrate sent me the picture of a child that had crushed the heads of two other children from mere jealousy at their being liked better than he, and then for several days pretended to have been himself the victim of an attack, until the bloody instrument was discovered which he had used, whereupon he confessed.

Another group of children banded together to pilfer churches, and one of them boasted of having robbed his accomplices. One child set fire to a village; another lamented that people no longer ate human flesh. Another child, five years old, intelligent and wide-awake, seeing blood flow from his little brother's nose, knocked him off the chair and, plunging his hands in the blood, cried: "I want to kill this baby, I want to see his blood, I want nothing else." Asked whether he would be willing to kill his mother, he answered: "I can't just now, I shall wait till I am bigger." Another bright child, eleven years old, had struck and threatened a comrade, then he killed him with blows from a sickle, not stopping till tired out, then threw the body into a ditch, where he washed himself and pre-

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tended that they had been attacked by a peasant and confessed only when he was promised immunity.

Cruelty was observed in the earliest youth of Caracalla, of Caligula, and of Commodus, who at thirteen had a slave thrown into a furnace for a trivial reason; of Louis XI. and of Charles IX. who had animals tortured, and of Louis XIII. who crushed slowly between two stones the head of a little bird, and became so irritated against a gentleman whom he did not like, that to calm him down they had to pretend to kill the gentleman. When he became king he delighted to watch the agony of Protestants condemned to death.

Now these criminals are recognised even from their earliest days because they have extraordinary anomalies of the face and of the skull, asymmetry, macrocephaly, exaggeration of the length or breadth, strabismus, ears badly placed or too large, enormous jaws, bad conformation of the teeth, especially of the incisors, now too large, and again too far apart, nose flat and crooked, hair abundant on the forehead, an exaggerated development of the body (a child of seven having the stature and weight of one of nine), strength precocious, left-handedness more common, and above all great dulness of the senses. The sense of touch instead of marking one or two millimetres is so dull as to give four millimetres or more. The sensibility to pain is very slight. The sense of odors and colors is imperfectly developed.

There is then a criminal type, so that your intuition leads you unconsciously to shrink from a person who has the face of a thief, and I have heard the case of a woman who, a few days after the birth of a niece who afterwards became a great criminal, said on seeing her eyes, "She looks as if she were going to murder us all." Recently the notorious Craveri was loath to rent a room to a man who had made a sinister impression on her, and who afterwards killed her. I explain this fact scientifically, by maintaining that in the strata of our brain there must exist elements of the sensations experienced by our progenitors, sensations which are reawakened as soon as the causes are re-presented which first awakened them.

And as in ancient times the wicked were the dominating op-

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pressors and the good were the oppressed, though these latter have been emancipated in the course of time, there remain internal instincts which arouse aversion to those who present that totality of exterior signs which anthropological science has at last explained.

Now, these characteristics in the child are almost the same as in the adult rascal, and when the teacher sees a child that does something naughty and has none of these physical characteristics, reassure the family, because these phenomena will certainly disappear. On the other hand, when the characteristics are conspicuous and continue to be more and more prominent, and the misdeeds are more and more serious, the teacher ought to be on his guard. In these cases the ordinary education will not do. Theoretical ethics passes over these diseased brains, as oil does over marble, without penetrating it. It is necessary to use much more energetic means. Meanwhile see if epilepsy does not exist which can be cured by proper medicines, and try to invigorate or call into being the child's power of psychic inhibition, which in many cases is lacking, and that, not with words, but by good, well-chosen examples. A lad in a reform school at Paris complained to Father Maury of the excessive labor of digging a drain. The priest said nothing, but took the spade and began to work; from that day forth the lad was the model of his comrades.

It is worth while to study the inclinations which predominate in these individuals, in order to be able to direct them and guide them in a special direction. Above all, withdraw them from those fields in which their criminal activity would most develop, especially as they would infect the innocent, as rotten apples do sound ones, and hence particularly keep them away from the great cities and even from large towns, set them at work on isolated farms or as cabin-boys at sea.[1] When at last no measures will longer avail, and when vice has become crime, and habitual crime, procure their

[1] This is the reason that in England, and especially in London and in Geneva, crime has diminished—notably among minors, whilst it is constantly increasing in the other countries of Europe. But the benefactions in the way of preventing juvenile crimes are a hundredfold more numerous in England and Switzerland than in other countries.

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isolation as if they were lunatics, so as to spare society a series of misfortunes, the family greater disgrace, and the judges an activity often useless. Human justice examines only fifty per cent. of those who become guilty, and of these does not punish twenty-five per cent., and punishes them inefficaciously, often sending them back, especially if young, to their wicked deeds, frequently several times a year. That is why crime triumphs every day, and all that we do serves only to aggravate it. And thus we suffer for the harm the criminal does us, and suffer for the expense of investigations to find him out and to convict him, without all this preventing us from being injured again by him in the near future.

If the teacher, by pointing out the future criminal, prevents his maturing in the bosom of society, he will do a holy work and one truly useful to humanity.

CESARE LOMBROSO.

TURIN, ITALY.

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ARRESTED MENTATION.

I DESIRE to call the attention of my readers to a psychological phenomenon, which is little known. The name by which I have designated it, may appear perhaps somewhat vague, but the considerations which I intend to advance, will, I hope, throw some light on it.

Neither the mind nor the senses of man serve him with absolute perfection. The eye often plays us false in reproducing the things and the phenomena of the outer world. For example, it shows us the moon as a small, luminous ball, whilst we know in reality that it is an immense body of matter revolving in space. We seem to see the sun revolving around the earth, though the contrary is an undoubted fact. In short, if the organ of vision be the source of a great part of our knowledge, it is also the source of a vast number of errors and wrong perceptions, which give rise to erroneous judgments or render exact judgments very difficult.

It is the same with the mind. The mind acts according to certain laws which lead us, according to circumstances, to truth, or to error. Error is sometimes the normal result of human reasoning and of the regular functioning of the mind according to the general laws of its activity. In such cases Truth is the exception. It is a perfected result which man has arrived at in his judgments by the correction of false conclusions, in the same manner that he indirectly corrects the false perceptions of his senses. Psychology hitherto has given little attention to the investigation of these organic defects of the human intellect, although it is the only study that furnishes us the key to a vast number of superstitions, errors, aberrations, and absurd beliefs prevalent in the human race.

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Logic, as formulated by Aristotle and John Stuart Mill, is far from supplying the natural laws which govern mental action; it sets forth instead, ideal rules, which, if closely followed, would in the end no doubt lead men to the discovery of the truth. Logicians like Aristotle and Stuart Mill study and analyse the corrective methods which lead our thought to the truth when the normal laws would lead it to error; they point out how man *ought* to think in order to discover the truth, but they do not show how he actually does think in the majority of cases, in seeking to control his sentiments and conduct.

We are aware that one of the most important actions of the mind is that by which we arrive at the causes of phenomena. We also know that the idea of cause implies no other idea but that of a constant relation of succession between two facts; to that second phenomenon which always follows the first phenomenon called *cause*, we give the name of *effect*. Let us now examine how the process of reasoning by which we discover causes differs, in the ideal logic of Aristotle and Stuart Mill, from the real logic which is commonly in use among men.

Let us take, for example, that method of discovering causes which Stuart Mill calls "the method of agreement." "Let *a* be the effect," writes Mill. "Here we have only the resource of observation without experiment; we cannot take a phenomenon of which we know not the origin and try to find its mode of production by producing it; if we succeeded in such a random trial, it could only be by accident. But if we can observe *a* in two different combinations *a b c* and *a d e*, and if we know or can discover that the antecedent circumstances in these cases were *A B C* and *A D E*, we may conclude that *A* is the antecedent connected with the consequent *a* by a law of causation. *B* and *C*, we may say, cannot be causes of *a*, since on its second occurrence they were not present; nor are *D* and *E*, for they were not present on its first occurrence. *A*, alone of the five circumstances, was found among the antecedents of *a* in both instances. For example, let the effect *a* be crystallisation. We compare instances in which bodies are known to assume crystalline structure, but which have no other point of agree-

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ment; and we find them to have one, and as far as we can observe, only one, antecedent in common: the deposition of a solid matter from a liquid state, either a state of fusion or of solution. We conclude, therefore, that the solidification of a substance from a liquid state is an inevitable antecedent of its crystallisation."[1]

Such, according to John Stuart Mill, is the mental process employed in the discovery of the causes of phenomena. It consists in a rigorous and accurate examination of the facts which precede the phenomenon of which we seek the cause, upon the basis of which we extricate the facts which precede always and invariably, from those which occur only occasionally and by accident.

Note, however, that we are concerned here with that scientific, attentive, and exact mode of reasoning, in which man strives by unusual effort to guard himself against every possible chance of error, and not at all with the method that is employed by the vast majority of mankind. Scientific reasoning demands the exercise of attention. To put forth the severe mental effort there demanded, would be impossible for all men, in every act of thought. It is true that the capacity for attention is greater among civilised nations than among savages, but even with the former the average is not very high. The use of this faculty sooner or later brings with it such a sense of exhaustion and fatigue as to cause men to husband their mental effort or to bestow their attention only on those things which interest them very strongly. "Very few," writes M. Ribot, "are those to whom attention is a necessity, and still fewer they who choose the *stantem oportet mori.*

As a matter of fact, only a few of our ideas are the outcome of voluntary reflexion and concentrated attention; the remainder are the product of associations which have been established unconsciously and gradually in our brains as the result of impressions from the things and phenomena of the surrounding world. Observe how the savage nations, incapable as they are, both of sustained attention and reflexion, have made practical use of so many of the forces of nature, without possessing even the most rudimentary

[1] J. S. Mill. *A System of Logic.* London, 1875. Vol. I., p. 469

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knowledge of physics or chemistry. "If we mistake not," writes M. Espinas, "it would puzzle very seriously some of our scientific men to give the mechanical theory of the *boomerang*, that weapon which after having attained its aim returns to the person who threw it. It has taken long and continuous study to explain theoretically the chemical processes practised from time immemorial in the preparation of metals and in the productions of the wine press, the dairy, etc. Horticulture came before botany; and it was from the stock-breeders that Darwin borrowed his idea of natural selection—not they from him. In all ages practice has preceded theory. In other words, action has in all ages adapted itself to circumstances without the assistance of abstract thought." To-day even, by a simple glance at the atmosphere, the sailor unfailingly discovers the signs of fair or foul weather. The sportsman often knows more about the psychology of the horse than ever Mr. Romanes or M. Houseau, though neither have made any profound study of meteorology or psychology. The proverbs of nations, which are a compendium of the national experience and wisdom, often contain truths that have cost science years of laborious research to establish. M. Lombroso and I found epitomised in proverbs the fact of the greater longevity of woman, a law which it took statistics a long time to establish scientifically by tables and figures.

This particular species of reasoning, which we may call with M. Espinas *subconscious*, and in which neither attention nor reflexion has much share, has always been employed by men on a much larger scale than scientific reasoning, properly so called. It is based on the law of association. Spencer has demonstrated that the associability of certain states of consciousness is in proportion to the frequency with which they follow each other in experience. How, then, do we arrive in this subconscious form of reasoning at the discovery of the causes of facts? Let us suppose a case. The appearance of phenomenon a is sometimes preceded by the phenomena $A\,B\,C$, sometimes by $A\,D\,E$, at other times by $A\,F\,G$; and in all the series of phenomena preceding a, the presence of A is always noted; that is to say, in the experience of individuals, A is three times associated with a, whilst $B\,C\,D\,E$ and so forth are only asso-

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ciated with it once. It follows according to the law enunciated that the idea of *a* tends to recall the idea of the cause *A*, far more strongly than it does that of *B C D* and so forth, because of having been associated with *A* a greater number of times than with the others. Farmers know perfectly well that rain is more necessary to good crops than either wind or moonlight. Having noticed from generation to generation that certain atmospheric changes, such as rain, wind, or a long stretch of clear nights produce different effects, little by little a train of ideas has been unconsciously established in the brain, associating rain with fruitful harvests. In this way they come to the knowledge of the fact that rain is a cause of vegetation and that moonlight is not.

The law of mental associations, acting alone and independently of attention, has given to man the knowledge necessary for life;—a knowledge of innumerable facts and countless natural phenomena that science only subsequently explained.

It cannot be denied that this is the commonest form of reasoning; for science, being still a recent product, is as yet only the privilege of a very few. Moreover, subconscious reasoning is undoubtedly much less fatiguing than the other mode, which involves the fullest consciousness and attention. Now, since man, by the law of least effort, about which I have spoken in another place,[1] always puts forth in his work the least possible intellectual exertion, subconscious reasoning ought naturally to be preferred before the others. However, if left uncorrected by attention and reflexion, unconscious reasoning does not always lead man to the truth; for in certain cases error is the normal and regular issue of this form of reasoning.

Now, one of these laws of subconscious reasoning is that which I call *arrested mentation.* By it in certain cases the thought of man is led in its search for causes to commit a species of error which is the source of many of the false notions of primitive races, and is today even the occasion of many fallacies which pass as accepted truths.

[1] See *Revue philosophique*, "L'inertie mentale et la loi du moindre effort," February, 1894.

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Let us suppose that the phenomenon *a* is always preceded by the phenomenon *A*, and that *A* is always preceded by *B*. The ulterior cause of *a*, then, is *B*; and the scientist investigating *a*, would not stop at *A*, but would push on his researches to *B*. Let us suppose, further, that *A* is of such a nature as to be apprehended by the senses, say of sight and hearing, and that *B* cannot be perceived by the senses, but is invisible, intangible, etc.; it follows that *B* produces no sensations, and although it is necessary for the production of *a*, still its presence cannot be detected except by attentive observation, comparison, reflexion, and analysis of facts; that is, by the employment of one of Mill's four methods for the discovery of causes. Now, subconscious reasoning is carried on by the association of states of consciousness produced in our minds by *sensations*; and *B* not producing sensations will be excluded from the associative series. In other words, in this mode of reasoning *A* will be considered as the ulterior cause of *a*, and *B* will remain utterly ignored. The train of thought is arrested at *A*; that is to say, it stops short at facts falling under the notice of the senses.

This theory well explains the genesis of a vast number of erroneous notions universally accepted as truths by primitive peoples, and sanctioned also by civilised persons ignorant of science or scientific methods. Some of the tribes in Australia have been known to pray to the white man's gun not to shoot them, for they believed it was the gun itself, without the co-operation of man, that produced the murderous fire. Certain barbarous tribes entertain an absolute veneration for the art of writing. The North American Indians believe a written paper cannot lie, and they regard a letter of recommendation as a great prize, purely for its own sake and not at all for its contents. The blacks in Congo believe that paper and writing are spirits capable of speech, and whenever a European sends a letter by a native to any one, if the latter should loiter or stop to amuse himself by the way, he never fails to hide it under a stone, for fear it should reveal his delinquency to either the sender or the recipient. In Annam the French unwittingly provoked a rising of the natives by tearing up some written papers which were regarded as sacred by them.

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Whence comes this exaggerated importance accorded by savage man to the fire-arms and handwriting of the Europeans? It is the result of the psychological phenomenon named by me arrested mentation. The savages observe that the European, by looking at certain signs and figures traced on a sheet of paper, is put in possession of the thoughts or the commands of another person, dwelling a great distance off, perhaps hundreds of miles away. This fact fills him with such astonishment that he is capable of but two sensations or impressions. He perceives that the reader has grasped the ideas of the other person, and that this fact happened after the signs on the paper had been scrutinised. These two events occurring always in succession become coupled together in his brain, and he concludes that it was the paper that spoke and revealed the thoughts of the absent person. He can neither estimate nor understand the whole complex series of associations connecting the written signs with their representative sounds, which is the essence of written language, and the vehicle by which we convey our thoughts to others. In order to understand this, the savage would have to possess the requisite knowledge of the importance and meaning of writing and the part those signs and images play in expressing and conveying thought. He cannot do this, but simply falls back upon the impressions caused by the writing and the effect it had on the reader. He connects these two facts and attributes to the paper what in reality is only the effect of a series of very complex associations established in our brains between the sight of certain signs and the images of certain sounds; and he finally concludes that a written paper is something supernatural and endowed with mysterious powers. It is the same with fire-arms, for the savage mind has great difficulty in understanding their mechanism.

Now is this error in the search for causes confined solely to uncivilised man? No. On the contrary it is to be met with in all the reasoning of those, who, though civilised, have not had the advantages of a higher education—in fine, in the reasonings of the great mass of the people. Let us glance for a moment at the legends connected with books. The common people, when they find any one with more than the usual amount of education and apparently better

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informed than his fellows, always attribute this mental superiority to the possession of books, from which this greater knowledge has been acquired. According to the Chinese popular belief, Fo-Hi, a saint and legislator, saw the laws which he gave his people, written on the back of a serpent. In the Koran this theory of the book applied to superior men is very noticeable. God sends a book from Heaven in which His will is found written—the Pentateuch, the Gospel, the Koran. Thus we read (Book VI., Verse 19): "Every age has its book;" (Book XIX., Verse 13) "the prophets have theirs." God says to John the Baptist (Book XIX., Verse 31): "Take this book (the Pentateuch)"; and the new born Jesus says to the family of His mother: "I am sent by God, He has given me His book." "O true believer," cries the prophet (Book IV., Verse 135), "believe in God, and in his apostle, believe in the book which He has sent and in the Scriptures that descended to earth before him."

This superstition about books is clearly explained by the theory of arrested mentation. The average man observes that persons of high mental attainments, physicians, lawyers, and others, possess a great many books which they often read. These, as well as all other distinguishing marks of the educated man, such as learned speeches, etc., are the only tangible evidence which his senses impart to him of their superior knowledge. Accordingly, he puts the two ideas together and comes to the conclusion that it is the book that has made the scholar. Here also the reasoning has stopped half way, for books are merely the means of communicating ideas, while in order to be a superior man, one must be able to create ideas. Nothing of all this, however, enters into the associations of the average man, who is limited to the reports of his senses for his knowledge. Accordingly, he concludes that it is through the possession of books and not by the power of genius that the learned man has become the superior of his fellows.

Arrested mentation explains also that exaggerated respect which man has always had for the instruments that assist him in his struggle for existence, attributing to them the success of his labors, whilst

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in reality that success depends as much on the ability of the man who wields the instrument as on the instrument itself.

Generally speaking the military power of countries is gauged by the number of horses, guns, cannons, and soldiers which each possesses, without taking into consideration that soldiers and weapons are merely instruments which can be made use of only if well handled, and that their number is subordinate to their effective use; for in the hands of a bad marksman a Remington even, may be less dangerous than the arrow of the savage. Here again arrested mentation comes into play.

It will be remembered that in the early days of the introduction of machinery into manufactories, riots broke out among the mill-hands. The reduction of wages and of labor was attributed to the use of these machines. But this was really caused by certain complications in the social economy of the time and was not at all the result of the introduction of machines. The working-classes, however, observing that these troubles always fell upon them immediately after the introduction of the machines, associated those two facts of which they had immediate knowledge and declared that the use of machinery was the immediate cause of reduced wages and scarcity of work, being ignorant of those economical complications which were the real though invisible causes of their distresses and which could only be discovered by dint of reflexion and a careful analysis of facts. Here again we have a case of arrested mentation.

A similar delusion existed in olden times with regard to gold and is still to be met with to-day among people ignorant of the principles of political economy. Gold in the opinion of such persons was wealth, while in reality it is merely the means whereby we estimate wealth, the actual source of which is labor. It was observed that those who possessed much gold were able to procure everything they desired. These two facts given by the immediate experience of the senses became associated in the minds of the greater portion of mankind, who never took into consideration the fact that all the precious metals in the world would be practically useless if nobody took the trouble to produce by means of labor the wealth which is measured in exchange by gold. The economic relations between

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money, wealth, and production can only be understood by abstract thought, and for this reason, they are neglected in subconscious ratiocination. Thus, Spain in the sixteenth century based her whole system of political economy on the acquisition of gold and on idleness; while she thought to enrich herself without exertion, she found herself in a very short time reduced to poverty.

Arrested mentation then is a real law of the mind, and a positive one, so to speak, for we have seen that it plays a most important part in much of human reasoning. Since it is this subconscious form of reasoning rather than the scientific form that is more commonly used, the preceding reflexions assume the status of a psychical law asserting that in the analysis of a series of phenomena with which another phenomenon is connected by a law of causality, human thought is arrested at the phenomena which produce the sensations and which are revealed directly to the senses, and neglects those that can only be discovered by reflexion and comparison. It is a defect of the mind, an organic defect, which logic seeks to remedy by a study of the methods of avoiding false conclusions.

So true is this that even scientific thinkers are occasionally subject to arrested mentation with regard to phenomena which are not the subject of their habitual researches. An eminent chemist still believes that gold is the wealth of nations; a social economist thinks that the military power of a government is augmented by the increased number of guns and of forts. In Italy men of science attribute the inferiority of Italian scientific discoveries to the poverty of the laboratories and the inefficiency of their instruments, failing to perceive that a genius can make great discoveries even without possessing very perfect or numerous instruments. For, to quote the words of a German naturalist about the microscope—"It is the eye and the brain of the scientist that makes the discovery, not the microscope."

Here we perceive the possibility of a new science—positive logic—which would make a study of the laws of human reason, according to age, the degree of intellectual development, and the state of civilisation. It is not true that logic is always one and the same; it varies, like all other human things, according to the age,

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the degree of intelligence, and the development of the brain. As it is a brain-function, it follows the variations of that organ. A child, a savage, makes use of modes of reasoning very different from those of an advanced thinker. The brain of a child or of a savage differs sensibly from the brain of a Newton or a Darwin. In the logic of Stuart Mill or Aristotle the *post hoc ergo propter hoc* is a heresy, yet it is the normal method used by children, savages, and the lower classes even to-day. It is said of Stephenson, that while watching one of his own trains carried along by a locomotive, he exclaimed: "It is the sun that moves all that." But if it is quite natural that a scientific man like Stephenson should perceive the sun to be the last cause of the motions of trains, it is also normal and in the regular order of things that an ordinary man with but little instruction should attribute that motion to the engine preceding the cars. The reasoning of the one stops short at this point, while the mind of the other, embracing an immense number of facts, links them all together into a marvellous synthesis.

I have examined but one law of this positive logic, the law of arrested mentation, but I do not doubt that in extending our researches we could find many more. We do not yet understand the mode of reasoning of the savage, of the average civilised man, or of the child; this is why so many ideas, superstitions, beliefs, usages, and customs astonish us and appear so inexplicable, while the key to all of them might be found in a complete psychology of human reasoning.

* * *

In this species of arrested mentation observation stops half way; it is arrested at the facts which fall under the notice of the senses. But arrested mentation can occur in still another way, involving the total abolition of observation.

As is known, one of the gravest faults of the mind has always been a penchant for the exclusive use of pure logic and deductive reasoning. In this century of experimental science, nothing appears more simple and elementary than the study of the phenomena of nature and its laws by observing facts and drawing conclusions from observation. This procedure appears so natural that it seems

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impossible to believe that any one could have ever supposed he could make the acquaintance of the facts of nature in any other way. But the history of science shows that the method of observation and the method of experiment were difficult conquests and only recently completely mastered. Formerly nothing was employed but pure reason without the slightest observation of facts; logic usurped the place of experiment, and all science began by the use of the deductive method. As Lange has remarked, even the materialistic schools, the very nature of whose studies kept them in close contact with nature, reasoned in this way. Physics and chemistry in their early days consisted merely of a series of deductions drawn by the aid of logic from a principle which was the fruit of some real or imaginary observation; and it was only later that men began to perceive that in order to understand natural laws correctly they must observe more and reason less. In fact, logic, which in the method of experiment and observation is only the psychological instrument with which we work upon facts in order to discover truth, the crucible by which we extract from the ore of observation the gold of truth,—this same logic was in the origin of science the source of truth, the philosopher's stone which could create gold. Now, I maintain that this abuse of deduction is the result of arrested mentation produced by definite causes; that it is a lower form of human reasoning, like the species of arrested mentation studied above—all of which would explain the commonness and diffusion of its use.

The form of arrested mentation which we have just been considering was due to the tendency in man to escape from the effort of attention and conscious thought. He prefers to use the subconscious form, which is not so severe a tax on his brain. I have elsewhere attempted to demonstrate that the mind always seeks to employ the psychological processes which demand the least expenditure of mental labor and are the least fatiguing. This I have called *the law of least effort*. All labor involves a waste of tissues, and it becomes painful in proportion to their weakness. Now, brain-work appears to create a sense of discomfort in the great majority of men who seek to reduce as much as possible the intensity of it by putting forth always the least possible effort. Keeping this

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in mind, we can easily understand why the *à priori* method is generally preferred to the *à posteriori*, with its experimental and practical observations; it is because the former mental operation is far more simple and less fatiguing than the latter, and involves less complex and multitudinous elements. In order to deduce a definite conclusion or law from the observation of a large number of facts, the mind must keep before it the images or ideas of all those facts, also the idea of their differences and their resemblances (which presupposes very complex relations between the ideas of the facts); further, for all or for many of the facts the idea of the conditions under which they are produced, and the idea of their relations with other conditions in which they are not produced. We see then that the mental operation by which we arrive at a definite conclusion if it starts from a positive observation of facts, is extremely complex and always implies the presence in the mind of a considerable number of elements.

But to draw a conclusion from a premise requires simply a syllogism, that is to say, a mere chain of ideas, from which are excluded all those collateral associations which constitute the complexity of the first form of reasoning. We need only keep clearly in mind the premises from which we draw a conclusion; consequently, the number of the states of consciousness are enormously lessened, even supposing these conclusions to become in their turn premises from which ulterior conclusions are drawn, for there are never more than two states of consciousness present to the mind, while the first even may be forgotten, as soon as its conclusion begins to assume the rôle of the premise to some final conclusion. In short, the advantage in favor of purely deductive reasoning is this, that there is no need to keep present to the mind anything except the premise and the conclusion, whilst in the other form we must grasp an infinity of ideas, with their perplexing relationships, as facts forming the basis of the conclusion, and these oftentimes are exceedingly numerous and diverse.

To give a rough idea of the widely different complexity of the two modes of reasoning, I will offer here a sketch of the states of consciousness which are present in both.

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If we call a, b, c, ... z the states of consciousness produced by the observation of the facts, $+a'$, $+a''$, etc., and $+b'$, $+b''$, etc., the ideas of the conditions under which a, b, c, etc. respectively present themselves; $-a'$, $-a''$, and $-b'$, $-b''$, the ideas of the conditions under which they do not present themselves; if we call, further, $+\alpha$, $+\beta$, $+\gamma$, the ideas of the resemblances, and $-\alpha$, $-\beta$, $-\gamma$, the idea of the differences between a, b, c, the following table will perhaps give some notion of the complexity of the mental operation:

$$\underbrace{-a'-a''-a'''\ldots-a^n \quad +a'+a''+a'''\ldots+a^n}_{a} \qquad \underbrace{-b'-b''-b'''\ldots-b^n \quad +b'+b''+b'''\ldots+b^n}_{b}$$

$$\underbrace{-c'-c''-c'''\ldots-c^n \quad +c'+c''+c'''\ldots+c^n}_{c} \qquad \underbrace{-z'-z''-z'''\ldots-z^n \quad +z'+z''+z'''\ldots+z^n}_{z}$$

$$+\alpha \quad -\alpha \qquad +\beta \quad -\beta \qquad +\gamma \quad -\gamma$$

We perceive, thus, how numerous are the mental elements actively employed in carrying us from an observation of facts to a scientific conclusion. Of course all these are not always present at the same time; they follow each other in quick succession and in groups of different combinations, but the mental operation is always complex.

In the deductive method, on the contrary, if we call the first premise A, and indicate conclusions by the smaller letters, using capitals for those same conclusions, after they also have become premises, we shall have:

A
b
B
c
C
d.

No matter how complex A, B, C are, even if composed of different states of consciousness, it is quite evident that this mental operation is much simpler. There are no collateral relationships, for when conclusion b, begins to act as premise B, A can be absolutely forgotten.

It is now plain to us why men prefer deductive reasoning; being as it is, psychologically simpler and much less fatiguing than

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the other. The less exercise the mind has in the one, the more it contracts the habit of using the easier process of thought, and the more incapable it becomes of using the difficult. Arrested mentation ensues. The mind stops at the relations between premises and conclusions, they being the only ideas that occupy its consciousness, all collateral associations being excluded. Little by little the mind becomes incapable of admitting other states of consciousness between the premises and the conclusions, even if such should be suggested by the sensations, because they complicate the relations. The mind shuts itself up, it sees nothing beyond the premise and the conclusion, no possible objections, nor any absolutely contrary facts. This explains why the clearest and most forcible demonstrations have no weight at all with excessively deductive minds. Harvey has shown this clearly in the history of his struggles in defence of his theory of the circulation of the blood. According to the old accepted belief, founded on a series of *à priori* reasons and on Aristotle's teaching, it was asserted that a certain opening was to be found in the heart. Harvey in many discussions and by ocular demonstration showed that this opening did not exist. This proof, which should have completely satisfied his opponents, had no effect at all upon them, so he had to be contented with asserting that though this opening did not exist in ordinary hearts, it might possibly have been found in Aristotle. Here, the reasoning was so closely confined to the premise and the deduction, that all collateral and relative ideas by which observation and logic might have modified the absolute character of the deductive inference, became impossible. The mind of these persons had been so accustomed to purely logical reasoning, which involves far less strain, that they had become incapable of any other form demanding a greater expenditure of energy. It was impossible for them to admit other elements to their habitual states of consciousness, even such as were suggested by their senses, and which, if admitted, would have led them to the true conclusion.

So we can understand why this abuse of pure logic and deductive reasoning has been in all ages a defect of thinking men, and why even to-day in spite of the tendency to experimental observa-

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tion, which is continually gaining ground, we must still strive to prevent science from falling back on *à priori* proofs and pure deduction. It is because this form is more convenient and less fatiguing and ends in a mental arrest, by which the intellectual labor is simplified; because it is a lower type of thought like the subconscious form, of which we have already spoken.

All reasoning, on the other hand, which is based on observation is far superior, more recent, less common, more complex, more fatiguing, but bears results which are vastly more extensive. More truths have been discovered in three centuries by the experimental method than could have been ascertained in a hundred centuries by mere deductions and the use of the *à priori* philosophy, which is nothing but a gigantic arrest of thought, under the sway of which mankind has lived for ages.

The analysis of the psychological process of arrested mentation explains both its genesis and its persistence.

G. FERRERO.

TURIN, ITALY.

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NATURALISM.

IN ONE of the most remarkable books of modern times—a work of rare literary excellence and, as it seems to me, transparent honesty of purpose—Mr. Balfour has weighed naturalism in the balance and found it wanting. Naturalism, however, is not at present blessed (or the reverse) with a stereotyped creed; it is rather a point of view or mental attitude; and those who adopt this attitude have been led to conclusions which are in many respects markedly divergent. There may be some whose naturalism tallies in all essential respects with that which Mr. Balfour has placed in one of the scales of his balance; but there are others who fail to recognise this naturalism as theirs; who believe that Mr. Balfour has failed in certain important matters to give to the conclusions of naturalism their due value; and who contend that, had he in these matters weighed what they regard as the substance, and not merely the shadow, the result of the process would have been different.

"The leading doctrines of naturalism are," we read,[1] "that we may know 'phenomena' and the laws by which they are connected, but nothing more. 'More' there may or may not be; but if it exists we can never apprehend it: and whatever the world may be 'in its reality' (supposing such an expression to be otherwise than meaningless), the world for us, the world with which alone we are concerned, or of which alone we can have any cognisance, is that world which is revealed to us through perception, and which is the subject-matter of the natural sciences. Here, and here only, are we on firm ground. Here, and here only, can we discover anything which

[1] *Foundations of Belief*, p. 7.

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deserves to be described as knowledge. Here, and here only, may we profitably exercise our reason or gather the fruits of wisdom."

Now in this definition of naturalism (especially having regard to the foot-note-description of phenomena as "roughly speaking, things and events, the general subject-matter of natural science"), it would seem at first sight that mental products and processes were to be regarded as wholly outside its sphere. But this is clearly not Mr. Balfour's intention. For one of the main theses which he seeks to uphold is that naturalism fails to give an adequate account of the developed consciousness in man. Special chapters are devoted to ethics, æsthetic, and reason in their relations to naturalism, the inadequacy of which to give a satisfactory account of our ideals of right, of beauty, and of truth, is set forth in eloquent language the fervor of which indicates the strength of the author's conviction. "It is hard to see," we are told,[1] "on the naturalistic hypothesis, whence any one of these various natural agents is to derive a dignity or a consideration not shared by all the others, why morality should be put above appetite or reason above pleasure." "My point is," says Mr. Balfour,[2] "that in the case of those holding the naturalistic creed the [moral] sentiments and the [naturalistic] creed are antagonistic; and that the more clearly the creed is grasped, the more thoroughly the intellect is saturated with its essential teaching, the more certain are the sentiments thus violently and unnaturally associated with it to languish or to die." Taking naturalism as our guiding principle "we can," he insists,[3] "hardly doubt that the august sentiments which cling to the ideas of duty and sacrifice are nothing better than a device of nature to trick us into the performance of altruistic actions." "Kant,[4] as we all know, compared the moral law to the starry heavens, and found them both sublime. It would, on the naturalistic hypothesis, be more appropriate to compare it to the protective blotches on the beetle's back, and to find them both ingenious."

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[1] P. 15.
[2] P. 15.
[3] P. 16.
[4] P. 10.

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Mr. Balfour then proceeds to consider the "sentiments known as æsthetic; and just as I assumed," he says,[1] "that the former class [of moral sentiments] were, like other evolutionary utilities, in the main produced by the normal operation of selection, so I now assume that the latter, being (at least in any developed stage) quite useless for the perfection of the individual or species, must be regarded, upon the naturalistic hypothesis, as mere by-products of the great machinery by which organic life is varied and sustained." No person," Mr. Balfour further assumes,[2] "who is at all in sympathy with the naturalistic view of things would maintain that there anywhere exists an intrinsic and essential quality of beauty, independent of the feelings and the taste of the observer." "And yet[3] the persistent and almost pathetic endeavors of æsthetic theory to show that the beautiful is a necessary and unchanging element in the general scheme of things, if they prove nothing else, may at least convince us that mankind will not easily reconcile themselves to the view which the naturalistic theory of the world would seemingly compel them to accept." "We must believe that somewhere and for some being there shines an unchanging splendor of beauty, of which in nature and art we see, each of us from our own standpoint, only passing gleams and stray reflexions, whose different aspects we cannot now co-ordinate, whose import we cannot fully comprehend, but which at least is something other than the chance play of subjective sensibility or the far-off echo of ancestral lusts."

Turning now to the rational faculties there is, for naturalism, Mr. Balfour imagines,[4] "no distinction to be drawn between the development of reason and that of any other faculty, physiological or psychical, by which the interests of the individual or the race are promoted. From the humblest form of nervous irritation at the one end of the scale, to the reasoning capacity of the most advanced

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[1] P. 33.
[2] P. 42.
[3] P. 64.
[4] P. 68.

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races at the other, everything without exception—sensation, instinct, desire, volition—has been produced directly or indirectly, by natural causes acting for the most part on strictly utilitarian principles. Convenience, not knowledge, therefore, has been the main end to which this process has tended." "Reason,[1] on the naturalistic theory, occupies no elevated or permanent position in the hierarchy of phenomena. It is not the final result of a great process, the roof and crown of things, on the contrary, it is, as I have said, no more than one of many experiments for increasing our chance of survival, and, among these, by no means the most important or the most enduring." Regarding mind as, from the point of view of organic evolution, an inherited faculty for self-adjustment,[2] Mr. Balfour reminds us that even here "one of the principal functions of mind is to create habits by which, when they are fully formed, it is itself supplanted. If the conscious adaptation of means to ends was always necessary in order to perform even those few functions for the first performance of which conscious adaptation was originally required, life would be frittered away in doing badly, but with deliberation, some small fraction of that which we now do well without any deliberation at all." And so we are led to the general conclusion that[3] if naturalism be true, or, rather, if it be the whole truth, then is morality but a bare catalogue of utilitarian precepts; beauty but the chance occasion of a passing pleasure; reason but the dim passage from one set of unthinking habits to another. "All that gives dignity to life," exclaims Mr. Balfour, "all that gives value to effort, shrinks and fades under the pitiless glare of a creed like this; and even curiosity, the hardiest among the nobler passions of the soul, must languish under the conviction that neither for this generation nor for any that come after it, neither in this life nor in another, will the tie be wholly loosened by which reason, not less than appetite, is held in hereditary bondage to the service of our material needs." "If, then,[4] naturalism is to hold the field, the

[1] P. 72.
[2] P. 73.
[3] P. 77.
[4] P. 81.

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feelings and opinions inconsistent with naturalism must be foredoomed to suffer change; and how, when that change shall come about, it can do otherwise than eat all nobility out of our conception of conduct and all worth out of our conception of life," Mr. Balfour is "wholly unable to understand"; while with regard to "those persons who claim to show by their example that naturalism is practically consistent with the maintenance of ethical ideals with which naturalism has no natural affinity," he contends[1] that "their spiritual life is parasitic; it is sheltered by convictions which belong, not to them, but to the society of which they form a part; it is nourished by processes in which they take no share. And when those convictions decay, and those processes come to an end, the alien life which they have maintained can scarce be expected to outlast them."

Such in brief outline,—for we need not follow Mr. Balfour into his catechism of the future,—is the argument for the inadequacy of naturalism in the ethical, æsthetic, and rational fields.

We may, perhaps, sum up the argument under four heads.

1. Natural selection, the dominant factor in organic evolution, cannot adequately account for the development of human ideals of right or beauty, nor for man's intellectual powers and achievements.

2. No other naturalistic interpretation of ethical, æsthetic, or intellectual phenomena, as presented in human development, is possible or worth consideration.

3. Any naturalistic interpretation of these phenomena would rob them of their worth and dignity.

4. Those who contend that their worth and dignity is intrinsic, whatever may be their extrinsic origin, cheat themselves in a vain delusion; and while they merely echo the sentiments of others, fancifully claim the sentiments as their own.

Now, with regard to the opinion expressed in the first of these four heads, I am in the main at one with Mr. Balfour. I agree with him that natural selection (if I rightly interpret him, as, in this part

[1] P. 83.

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of his work, identifying naturalism with natural selection) cannot adequately account for more than the foundation of, certainly not for the final development of man's ideals of right or beauty, nor for the growth of human knowledge. But in the assumption that no other naturalistic interpretation of ethical, æsthetic, or intellectual phenomena is possible, I am in distinct and direct antagonism. It is true that Mr. Balfour does not formulate this assumption nor give it explicit statement, but we seem forced to conclude from his silence on the matter either that, in his opinion, there is no such interpretation in the field, or that no such interpretation is worthy of consideration.

I trust that I am not misinterpreting Mr. Balfour in saying that he here identifies naturalism with natural selection. The moral sentiments are, he says, to be compared on naturalistic principles to the protective blotches on the beetle's back,—a phrase which has been hailed with delighted acquiescence by those who sympathise with his dialectic. Æsthetic sentiments are mere by-products of the great machinery by which organic life is varied and sustained. Reason is no more than one of the many experiments for increasing our chance of survival. Throughout the discussion Mr. Balfour appears to assume that naturalism, in dealing with the products of social evolution, has come in sight of no principles other than those which are factors in organic evolution. Mind, he says, from the point of view of organic evolution, may be considered as an inherited faculty for self-adjustment; and to this we may add that from the point of view of social evolution, mind may still be considered as continually self-adjusting. But there is this important distinction, that whereas in organic evolution the mental faculties are subservient to the preservation of the organism in self-adjustment to an environment essentially physical and organic, when we come to the mental evolution of man as a social being the organism is made subservient to the development of mind in self-adjustment to an environment of ideas and ideals.

For this cannot be too emphatically insisted on: that natural selection deals with organisms, and that its method is that of elimination, if not from the world of living things, at least from the world

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of breeding things. Natural selection only affects the development of mind and consciousness incidentally—that is to say, in so far as mind conduces to organic evolution. In social evolution among human beings, natural selection ceases to be the dominant method of evolutionary progress; and mental evolution, *involving other principles, not less natural than those which the study of organic development has disclosed*, becomes the central feature of the process.

We must extend our conception of naturalism so as to include a naturalistic interpretation of nature in all its wealth of moods, neither excluding inorganic nature on the one hand nor human nature on the other hand. If the leading doctrines of naturalism are that we may know phenomena and the laws by which they are connected; if for naturalism the world with which alone we are concerned and of which alone we have any cognisance, is that world which is revealed to us through perception, and which is the subject-matter of the natural science; we must include under the head of phenomena the loftiest ideals which the human mind has reached, and rank among the natural sciences ethics and æsthetics. These are the claims of naturalism. Whether they can be fully substantiated or not is a matter for the future rather than for the present to decide. But in any case the proof, no matter how cogent and how eloquent, that natural selection is incapable of adequately accounting for Raphael or Shakespeare or Darwin, is about as apposite as the proof that the known laws of crystallisation are incapable of affording an adequate explanation of the buttercup or the daisy.

Nor is it necessary that naturalism, in order to justify its claims, should be able to give a complete and adequate explanation of the universe. To the naturalist with all his arrogance there still remain, it is to be hoped, some few shreds of intellectual modesty. And he may fairly claim as much indulgence as Mr. Balfour himself claims for his suggestions towards a provisional philosophy, "It is evident, of course," he may say,[1] "that this general view [of naturalism], if we are fortunate enough to reach it, will not be of the nature of a complete or adequate philosophy. The unification of all belief into

[1] Pp. 233–234.

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an ordered whole, compacted into one coherent structure under the stress of reason, is an ideal which we can never abandon; but it is also one which, in the present condition of our knowledge, perhaps even of our faculties, we seem incapable of attaining. For the moment we must content ourselves with something less than this. The best system we can hope to construct will suffer from gaps and rents, from loose ends and ragged edges. It does not, however, follow from this that it will be without a high degree of value; and whether valuable or worthless, it may at least represent the best within our reach."

That a naturalistic interpretation of man's ethical and æsthetic ideals tends in any degree to rob them of their worth and dignity appears to be false in fact. I, for one, should be sorry to believe that the noble deed, the unselfish action, the lofty ideal have no intrinsic worth and dignity but shine only with a borrowed lustre, no matter what the source of that lustre. Any creed which tends on the one hand to rob man of his inherent dignity, or on the other hand, to attribute his vices to diabolic agency, degrades him from the position of a responsible being and makes him a mere puppet over whom the gods meanly quarrel. And if it be asserted that the naturalist's conceptions of the worth of human endeavor are the spurious heritage of a creed that is not his, the counter-assertion may be made with at least equal plausibility, that the dignity of their supposed extrinsic source is but the reflected and hypostatised glory of their own inherent nobility.

I would not, however, for one moment be supposed to contend that naturalism, as I conceive it, is necessarily either antagonistic to or exclusive of supernaturalism, regarded as a product of human idealism. The "reconciliation" between naturalism and supernaturalism, to use a current but by no means satisfactory phrase, is not to be found in any more or less arbitrary separation of the natural and the supernatural but in the identification of the one with the other, and in the recognition on either part of the fact that there is no minutest detail of the natural that has not, or may not have, for man as poet, seer, and idealist, a supernatural aspect. The natural, we are often told, leads up to the supernatural at the utmost

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and ultimate verge of scientific analysis; beyond the ever-widening oasis of scientific knowledge, say others, lies the circumambient desert of agnosticism. The truer view is that the sphere of naturalism is throughout its whole extent and in every detail, no matter how seemingly insignificant, interpenetrated with supernaturalism. And this supernaturalism is not something separate from the phenomena which it is the business of science to investigate, but their inner and deeper aspect which it is the function of philosophy and religion to harmonise. On this view naturalism and supernaturalism are not antagonistic, but reciprocal; do not dwell apart but are coextensive; do not deal with separate spheres, the one knowable and the other unknowable, but constitute the diverse aspects of that body of belief which is the outcome of human experience at its best.

We now reach a point of view from which our differences from Mr. Balfour may be more closely seen and indicated. We are prepared to sweep the curve of naturalism through the whole range of the knowable, not imagining that the naturalistic interpretation of the universe is at present in any degree adequate or final, but accepting it as a provisional system of great promise. In doing this we are far from denying the existence or the all-pervading influence of the supernatural; nay, rather we are laying firmly the foundations of a belief based not on rationalism, but on idealism. We contend for the natural and intrinsic nobility of man at his best and highest, and see therein the foundations of his religious ideals.

There is, however, another point of view from which we must consider the claims of naturalism; and here again we will take the criticisms of Mr. Balfour as our starting-point.

In his chapter on the "Philosophic Basis of Naturalism" he skilfully plucks naturalism of its feathers and then, standing aside, genially encourages us to laugh at the poor, naked thing's efforts at flight as he tosses it up into the thin air of scepticism. Or, to vary the analogy, we may say without injustice that by a little ingenious mixture of the results of physical analysis with some of the conclusions of psychological analysis he produces a dish so nauseous and indigestible that even the general reader, who can swallow most

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things, wonders how naturalism can contrive to eke out a lean and meagre existence on such hopelessly innutritious provender.

In the preceding part of Mr. Balfour's work we are prepared for what is to follow by the assertion[1] that "naturalism (as commonly held) is deeply committed to the distinction between the *primary* and the *secondary* qualities of matter; the former (extension, solidity, and so forth) being supposed to exist as they are perceived, while the latter (such as sound and color) are due to the action of the primary qualities upon the sentient organism, and apart from the sentient organism have no independent being." "We are dealing, recollect," says Mr. Balfour,[2] in his further development of the subject, "with a theory of science according to which the ultimate stress of scientific proof is thrown wholly upon our immediate experience of objects. But nine-tenths of our immediate experiences of objects are visual; and all visual experiences, without exception, are, according to science, erroneous. As everybody knows, color is not a property of the thing seen: it is a sensation produced in us by that thing. The thing itself consists of uncolored particles, which become visible solely in consequence of their power of either producing or reflecting etherial undulations. The degrees of brightness and the qualities of color perceived in the thing, and in virtue of which alone any visual perception of the thing is possible, are, therefore, according to optics, no part of its reality, but are merely feelings produced in the mind of the percipient by the complex movements of material molecules, possessing mass and extension, but to which it is not only incorrect but unmeaning to attribute either brightness or color." And again,[3] "When I am in the act of experiencing a tree in the next field, what on this theory I am really doing is inferring from the fact of my having certain feelings the existence of a cause having qualities adequate to produce them. It is true that the process of inference is so rapid and habitual that we are unconscious of performing it. It is also true that the inference

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[1] P. 42.

[2] Pp. 111, 112.

[3] Pp. 114, 115.

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is quite differently performed by the natural man in his natural moments and the scientific man in his scientific moments. For, whereas the natural man infers the existence of a material object which in all respects resembles his idea of it, the scientific man knows very well that the material object only resembles his ideas of it in certain particulars,—extension, solidity, and so forth,—and that in respect of such attributes as color and illumination there is no resemblance at all. Nevertheless, in all cases, whether there be resemblance between them or not, the material fact is a conclusion from the mental fact, with which last alone we can be said to be, so to speak, in any immediate empirical relation." No wonder that Mr. Balfour is "struck by the incongruity of a scheme of belief whose premises are wholly derived from witnesses admittedly untrustworthy, yet which is unable to supply any criterion, other than the evidence of these witnesses themselves, by which the character of their evidence can in any given case be determined." "In other words," he says a little later, "we need only to consider carefully our perceptions regarded as psychological results, in order to see that, regarded as sources of information, they are not merely occasionally inaccurate, but habitually mendacious," though on his own presentation of the naturalistic position, this habitual mendacity would seem to affect only the secondary and not the primary qualities.

What answer will be made to Mr. Balfour by those naturalists, if such there be, who accept the halting analysis into primary and secondary qualities, I am not in a position to judge. "Let the galled jade wince, our withers are unwrung." It will be more to the purpose to state, as clearly as may be and without unnecessary technicalities, the truly naturalistic attitude, as I conceive it. Above all things it behooves us to stick close to the realities that are given in practical experience; and to remember that every step in analysis takes us so much further from the reality from which we start. The tree in the next field is for us who see it just as real a bit of practical experience as we can possibly have. And if a physicist on our right hand says that he has spent a lifetime in submitting trees to physical analysis, and that he can inform us that the tree is nothing but matter and energy; while a psychologist on our left hand

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assures us that had his friend the physicist been more profitably employed, he would long ago have discovered that the tree is nothing but sensations and the relations between them combined in subtle synthesis; we may reply to them both that, profoundly interested as we are in the analytical results to which they have been led in the prosecution of their special studies, they have, in neither case, affected in the smallest degree the reality of the tree that stands before us in the field. Were some chemist to take from our dessert-plate a ripe and luscious peach, and hand us instead a few grains of carbon and some cubic feet of sampled gases, telling us that these were the ultimate realities of which the fruit consisted, should we not ask him to retire to his laboratory and try to learn this lesson—that in no case can the results of analysis have a reality superior to or more valid than that the destruction of which had yielded these elements? helping ourselves meanwhile to another ripe peach and realising to the full its velvet skin, its rich color, its scent and sweetness. There is perhaps no philosophic cobweb that has caught more unwary human flies than this doctrine that the products of analysis have somehow a reality superior to that from which they are extracted; that the trembling of molecules or vibrations of the ether are more real than the Kreutzer Sonata; that the extension and solidity of the rose-bud are more real than its scent and color; that sensations of smell or taste are more real than the aroma of a cigar or the bouquet of a Burgundy.

Naturalism, then, should stick close to the fundamental reality of practical experience. Holding fast by this, it may proceed to analyse. In every bit of experience, from the simplest to the most complex, an objective and a subjective aspect may be distinguished. In the daily experience to which our senses minister the objective aspect offers a field to the student of physics; and for the special purposes of his inquiry he submits this to further analysis. To the student of psychology, on the other hand, the subjective aspect offers a field of co-ordinate importance, in which he employs his special methods of analysis. Unfortunately, the almost inevitable tendency of the specialist to magnify his office and to allow his own results to hide the rest of the universe leads the physicist and the

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psychologist alike to forget or ignore the fact that each is dealing with but one side of the shield of experience, and that the reality abides not merely in the detailed chasings of the one side or the other, but in the shield itself in its entirety and its integrity. And then steps by some dainty philosopher bent on picking the brains of both and co-ordinating their results; he finds that when the physicist has pared away nearly all his side of the shield there remains a residual film of energy, and when the psychologist has pared away nearly all his side of the shield there remains a residual film of consciousness. Unable to separate these residual films, which form all that is left of the shield, he identifies the two, and smilingly assures us that he has solved the ultimate riddle of the shield. Ill would it become me to ridicule the results which this philosopher has reached. I believe that just as the outcome of the analysis of physicist and psychologist is essentially helpful, so may the co-ordination of these results in a theory of ultimate monism be of real service. But if the philosopher holds up to our view the residual film and exclaims: This then is the true and veritable shield; the naturalist must step in and say: Pardon me; you have managed between you to whittle away the shield itself; and what remains is little more than a formula, valid enough no doubt, but thin and filmy to a degree. In the name of naturalism I say, give me back the shield.

All this, it may however be said, though it is dull enough to be possibly true, is no answer to the searching inquiries of scepticism. It comes to no more than this, that naturalism accepts experience as it finds it and says to the sceptical critic: Don't bother me with problems which have no interest for me and which I can't solve.

Well! it seems to me that the first question that naturalism, or any other theory of the world, has to face is this: What is to be the criterion of reality? And that naturalism should reply to this question, that direct experience is the only valid criterion we have. The analyst's reply is quite different. That which remains after the most searching and rigorous analysis is, he tells us, the ultimate reality. And his method lands us either in untenable materialism

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on the one hand, or, on the other hand, in an idealism, so called, which "admits of no answer and produces no conviction."

Nothing I venture to affirm can be more real than a bit of practical experience in the moment of that experience; and if in analysis we *distinguish* therein an objective aspect on the one hand and a subjective aspect on the other hand, let us remember that these two are of strictly co-ordinate reality. The objective aspect of our experience—the world as we experience it, in every detail of form and color of sound and scent—is, I repeat, of strictly co-ordinate reality with the subjective aspect. In experience neither is before nor after the other for they are one and indivisible, though they are distinguishable in analysis.

Accepting this criterion, however, new questions at once suggest themselves. Since the experience is individual—let me say for the sake of emphasis *my* experience—what may be real for me, may be real for no one else. Suppose that I am color-blind, my geraniums will bear flowers indistinguishable in color from the leaves of the plant. The flowers for me are really green. But for you they are really red. How are we to get over this discrepancy? The flowers themselves cannot be really at the same time both red and green. Naturalism boldly asserts that they can—green to me and red to you. Not, be it noted, both red and green either to me or to you, but red to one and green to the other. But since to the normal human being they are, under the usual conditions of sunlight illumination, red, we may say that they are really red to the normal man. It must not be forgotten that experience is impossible in the absence of someone who experiences: and if the someones differ, the experience itself must so far be different. When we come to consider æsthetics and ethics we find that these facts are of such importance that they cannot be overlooked.

But what about the objective world when no one is there to experience it? First of all it is not then actually objective in the sense in which I have been using the word. For object is the correlative of subject, and in the absence of experience neither term of the correlative couple has any present existence as such. But surely, it will be said, the world, or at any rate something, persists whether we are

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there to experience it or not. I am not prepared to deny it. Nay, more I am, for my own part, bound to confess that I assume that it is so; that I cannot in my thinking get on without the assumption; and that all experience seems to me to justify the assumption.

I have now at sufficient length explained what are the leading tenets of a naturalism which differs in certain marked respects from that which Mr. Balfour had in view, They are as follows:

1. Naturalism sweeps through the whole range of the knowable.

2. It is nowise antagonistic to or exclusive of supernaturalism.

3. It takes as its criterion of reality direct experience prior to the analysis of science.

4. Of the two aspects of experience which primary analysis first discloses, the objective and the subjective, it regards both as of strictly co-ordinate reality.

5. It asserts the inherent and intrinsic worth and dignity of the human ideals.

6. It refuses to admit that natural selection, potent as this may be as a factor in organic evolution, is to be regarded as chief naturalistic factor in human evolution.

C. Lloyd Morgan.

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THE NEW ORTHODOXY.

ORTHODOXY is the confidence that a certain proposition is right and that all other propositions which contradict it are wrong. Accordingly, orthodoxy, or rightness of opinion, is the natural aim of both science and religion, and what we need most in our churches, schools, and universities is genuine orthodoxy. But how shall we obtain it? Is not orthodoxy, perhaps, a *fata morgana*, an unsubstantial vision which eludes our groping hand and surrenders us to the illusion of blind faith? Indeed, it has come to pass in these days in which agnosticism is the fashionable philosophy of the time, that a religious indifference like a spiritual blight has taken a strong hold of the human mind so as to discredit any kind of orthodoxy, and the doctrine of the vanity of all faith, be it scientific or religious, has come to be recognised as the sum of all human wisdom. But the very existence of science plainly demonstrates that whatever errors we may have inherited from the scientists and the religious teachers of the past, we must never lose faith in the ideal of Orthodoxy, which implies that there is truth and error, that the truth is one and self-consistent, and that whatever conflicts with the truth is error. This is no denial of the theory of the relativity of knowledge, nor does it imply the assumption that a man can become omniscient; but in spite of the relativity of knowledge, and in spite of the insufficiency of our means of investigating all the details of the immeasurable universe, we must remain assured that man can discern between truth and error, he can solve the various problems with which he is confronted, and he can realise, at least in part, and step by step, the ideal of orthodoxy.

Science has made many new discoveries in this century and has

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established truths which widen our spiritual horizon and deepen our philosophical understanding. Under these conditions it is but natural that our religious beliefs, too, will have to be revised and restated. They must be purified in the furnace of scientific critique, and I trust that thereby they will not lose in religious significance. On the contrary, they can only gain in every respect; and after the fusing and refining religion will be purer and shine brighter than ever.

There is no need either to defend or to denounce the old orthodoxy, but it is important to understand the nature of the ideal of orthodoxy and to propound on this basis a new conception of orthodoxy which is the only possible ground of a reconciliation of Religion with Science. Agnosticism will not save us, and blind faith has no warrant, but we must broaden both our science and our religion until our religion becomes scientific, and our science religious. On the one hand, we must scientifically and fearlessly investigate the eternal psychical, social, and cosmic facts upon which religion rests; and on the other hand, we must recognise the divinity of scientific truth, imbue it with religious devotion, and seek its religious significance.

How often has Religion been denounced in the name of Science as superstition, and how often has Science been pilloried in the name of Religion as ungodly and profane! Scientists may err and religious doctrines may be wrong, but Science cannot be anti-religious and Religion cannot be anti-scientific; for what is Science but the search for truth, according to the best, the most reliable, and most accurate methods of investigation, and what is Religion but the love of truth applied to practical life!

It is understood that we must be on our guard not to accept the opinion of a scientist as genuine Science, yet we should not denounce Science itself or the principles of Science. However much we may distrust the calculation of an example, and the logical conclusions of a syllogism, we cannot question the reliability of arithmetic or the trustworthiness of logic.

Such is the narrowness of our traditional conceptions of Science and Religion, that both are sought in their externalities. Religion

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is defined as a belief in dogmas, or as worship of one or several gods, or as the practice of ceremonies, such as incense burning, baptising, and mass-reading, while Science is described as a mere collecting, classifying, and collating of facts. And it is noteworthy that there are scientists who misunderstand the spirit of Science and there are clergymen who have no idea of the meaning of religion. How is that possible? Indeed it is natural; for the routine workers in both fields are so preoccupied with the exact observation of their traditional practices that they become absolutely unfit to understand the significance of their professions in the universal economy of mankind.

And can there be any doubt about the cause of the conflict between a one-sided Science and a one-sided Religion? The cause of the conflict is on the one hand the paganism of those who, forgetful of the fact that dogmas are symbols, urge a belief in the letter, which inextricably implicates them more and more in absurdities until they begin to hate reason and decry the light of science because it blinds their eyes. On the other hand we are confronted with a lack of trust in truth that is widely spread among the men of science. There are many scientists who judge religious questions from their limited field of inquiry, and imagine that the lower spheres of nature are the whole of nature. Chemistry is expected to solve the problems of psychology, morality is subsumed under zoölogy, and science is identified with materialism. Man because he is an animal is supposed to be a beast. This is no exaggeration, for such and similar statements have been actually made by prominent naturalists. No wonder that, where such a confusion of thought prevails those who set their trust in the letter of their sacred traditions will glory in the bankruptcy of science as being the best evidence of the truth of religion, while science will fall a prey to agnosticism and pessimism. No lesser authority than Huxley pronounced the dreary theory that nature and the laws of nature, including the laws that govern the social relations of man, are intrinsically immoral.

Here is not the place to refute the self-contradictory argument of those who rejoice in the alleged bankruptcy of Science and vainly

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attempt by logical fallacies to prove the fallaciousness of reason. Suffice it to say that the extinction of the light of Science will never make Religion brighter. The moon is better seen when the sun is hidden; but if you extinguish the sun, even the moon will cease to shine. By rendering the Logos illogical, you not only make Science impossible, but also change Religion into the superstition of mere traditionalism. The acceptance or rejection of Science means the parting path between genuine Religion and superstition.

What is Science that, in the name of Religion, it should be abused and denounced? Science formulates the facts of our experience in natural laws; it searches for and describes the eternal of nature. Thus science is the embodiment of the immutable world-order of the Logos that was in the beginning, of God in His revelation, and truly, "this is the stone which was set at naught of the builders, which is become the head of the corner." (Acts, IV., 11.)

Science offers a description of experience from which the purely subjective elements have been discarded. Science eliminates sentiment, passions, and prejudice, and undertakes to establish objective truth. Science drops the human of man; it liberates him from the limitations of the senses, and reveals before his mental vision the secret inter-relation of cause and effect, and the order of immutable laws. In a word, Science is superhuman; it is the Jacob's ladder, which at its bottom touches the world of sense, while its top reaches into the heaven of spirit.

Whenever God speaks to man, it is not in the earthquake of bigotry or dogma, nor in the fire of fanaticism, but he comes in the still small voice, and the still small voice is heard in Science, for Science is an utter surrender of what we wish to believe to a recognition of the actual fact. Science is a hushing of all thought of self, so as to give room to a calm contemplation of truth.

If you want a Religion that is truly catholic, let it be in accord with Science.

Catholic is that which is universally acceptable, and what is more catholic than Science? For the establishment of a Catholic Religion, therefore, we must select the objectivity of scientific truth as the cornerstone. This and nothing else is the eternal Logos

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which is exemplified in the noble lives of the prophets, and the incarnation of which constitutes the sonship of God. This and nothing else is the basis of Religion; and no man can lay another foundation.

Science is sometimes erroneously supposed to be a human invention; it is represented as the truth of man, which is contrasted to the divine revelation of religious dogmas as being the truth of God. But Science is not of human make; Science cannot be fashioned by man as he pleases; Science is stern and unalterable; it is a revelation which cannot be invented but must be discovered. There is a holiness in mathematics, and there is ethics in the multiplication-table. On the other hand, dogmas such as the various churches have formulated as their platforms, are the expressions of human opinions. They have been framed by the religious leaders of the past and have been accepted or rejected through majority decisions of so-called œcumenical councils. They are, I grant, sacred documents of what our ancestors thought to be the truth; they have been cast in the mould of mighty personalities, but they are merely a reflexion of the spirit of their age, including all its noble aspirations and shortcomings.

Our traditions and the formulations of belief, as set forth in the Credos of former centuries, are unquestionably important statements; they must be considered and reconsidered, and are in a sense authoritative, as coming from men whom we respect, but they are not a final decision of all problems; they possess no absolute authority and can bind neither our reason nor our conscience. It is our sacred duty to revise them again and again in the light of that direct revelation of truth which is always and constantly accessible to man. Man can find salvation only through a scrupulous self-examination and a right comprehension of the events of life.

If you find traditional formulations of faith acceptable, let them stand on the same principle as scientific truths. Scientific truths are always liable to revision, and no scientist makes the slightest objection to having his propositions revised. Why should theologians do so? Scientific truths once rightly formulated need shun no criticism,

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since upon re-examination they will be corroborated; and, if they be misunderstood or forgotten, they can be rediscovered.

Science, it is true, appears as an enemy of the old dogmatism, which to the unthinking made religion easy. Science discredits blind faith and rejects the trust in the letter. It may destroy many long-cherished prejudices that have become dear to us. But if a dogma cannot stand scientific criticism, if it is not true, how can it comfort us? Let a dogma that is untrue go, and have trust in truth. The truth, whatever it be, let us be assured, will be the best. Truth is better than the most beautiful dream, and, if truth appears bitter at first sight, let us be patient. If Science destroys, it is sure to give us something better.

While dogmas, viz., the platforms of the various churches, are man-made, we should not forget that they nevertheless reflect the truth of a revelation that is superhuman. They may not be true in their letter, yet are they full of meaning. The truths of this meaning appear in a new light with every advance of civilisation and will be better understood at every stage reached by Science. Let us always bear in mind that Religion, although it must be one with Science, is not Science; the province of Religion is the broad field of practical life, and its aim is to teach moral truths to the masses, not by proving them in logical deductions, but by explaining them in allegories, and the symbolic nature of ecclesiastical dogmas has never been doubted except by the most narrow-minded dogmatists. The Church actually calls the confession of faith a "symbolum," and Christ declared that he spoke in parables only. It is a perversion of the fundamental meaning of our religious revelation to demand a belief in the letter where confessedly from the beginning nothing but a symbolic expression of a deeper mystery was offered?

Neither the prophets, nor Christ, nor the apostles ever intended to set up a system of revelation that should be contrary to Science. It is true that they proclaimed many truths which the sages of their time did not grasp,—love of enemies and charity; but a deeper comprehension of the facts of life proved that, upon the whole, their ethical injunctions were right in spite of their apparent impracticability.

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Let us not be afraid to analyse religion. Do not think that if the nature of the symbol is explained, nothing will be left. If the myth is understood, we become acquainted with the truth itself, which we formerly had merely seen as through a glass, darkly, in the tinsel deckings of poetic imagery.

Authority is sometimes contrasted with Argument, and the weight of a name is proffered to check the boldness of progressive thought. But there is no sense in speaking of Authority as opposed to Reason; for if by Authority is meant the confidence which we have in a person, what is it but our respect for the soundness of his judgment? Indeed, there is no authority of person; all authority is ultimately the authority of provable truth; it is the authority of Science, and rests upon the superpersonal authority of the divine Logos.

To praise Authority at the expense of Science and Reason is like accepting a greenback and repudiating the gold which the greenback represents. An unredeemable greenback is a mere scrap of paper, and authority not based upon experience that can critically be tested and verified by renewed experience, is a mere usurpation of power. There is no genuine authority which when analysed is not reducible to experience, and as science is systematised experience, we should think that there is no sense in the contrast between Science and Authority.

While we must insist on the recognition of the authority of Science, we should not be blind to the great preference of Religion in having been the first to point out that justice is more powerful than violence, and charity stronger than vengeance. At present, Religion being naturally conservative is lagging behind Science, but there was a time when Science was lagging behind Religion. Religious prophets have in former ages propounded moral ideals, sternly demanding their practical application, the rationality of which the scientists of the time were not sufficiently advanced to prove. Religion anticipated many moral truths which modern Science is only now beginning to understand. When commending Science as the ultimate criterion of truth, let us not forget the great service which Religion rendered while Science was still in its swaddling clothes!

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To sum up: any faith that is irreconcilable with Science is doomed. He who rejects Science blights the life of Religion. For the spirit of genuine Religion is the same as the spirit of genuine Science. Science is a divine revelation. Contempt for science and a deliberate suppression of reason is an intellectual sin; it is the sin against the spirit which cannot be forgiven, but must, if persisted in, ultimately lead to eternal perdition.

Therefore, what we need most dearly is Orthodoxy, but let our Orthodoxy be genuine.

EDITOR.

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THE FIFTH GOSPEL.

EVERY revelation granted to man is at the outset denounced as atheistic and sacrilegious. The flash that follows the "Let there be light" sadly changes the faces of the gods, whether they be the Dagons born of man's fingers, or the Dogmas of his fancy, as they stand in their twilight shrines, thick with the smoke of incense or hazy with the "dim religious light" of mystic contemplation. Not only this, but the dazzling glare pains to the blinding-point the eye of faith until the familiar features, nay, even the majestic outlines of the Divine Form seem utterly lost, and it is little wonder that the shuddering cry goes up, "Great Pan is dead!" The instant impulse, almost too strong to be resisted, is to turn the back upon the light which has wrought this havoc, declare it a bale-fire, an *ignis fatuus*, a lying illumination, and thus save both eyes and theology. There is plenty of darkness left to construct another shrine. And this is the course usually taken in point of fact, but is it wisest, not to say bravest, or manliest? Whoever follows it, proves himself to have been worshipping, *not* the Deity, but his own pet conception of Him; Light cannot alter Being, only its appearance. And yet "Thou that destroyest the law and the prophets" is the denunciation hurled at every new light-bringer.

A courageous few, however, turn and unshrinkingly face the dazzling ray of golden sunlight which has shot unbidden across the purple twilight of the sanctuary, proudly secure that whatever is true cannot be altered, whatever is untrue is unworthy of their homage. As ever the bravest course is the happiest, and although the shrine is seen shattered and empty, while the rich vestments, brain-woven and fancy-dyed, with which, with unconscious irony,

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divinity has been "adorned," lie folded upon the floor like the grave-clothes at the feet of Lazarus, yet the roof is found to have been but a veil of twilight and shadows, and heaven above is revealed.

And as their glad eyes gaze up into the sapphire, star-sprinkled vault, they are again aware of a Presence of far lovelier, though vaguer outline, and though more remote, of a grandeur never before conceived.

This is peculiarly true of that great burst of eternal truth which broke upon the world chiefly through the work and genius of Charles Darwin. Its dawning was heralded by a shudder and a shriek from every pew and pulpit, and "Darwinism" became a synonym for blasphemy. Its truth was vehemently denied, its logic mercilessly ridiculed, its "debasing tendencies" furiously denounced. It was to be given no quarter, for if tolerated for a moment it would utterly destroy every vestige not only of religion, but of the religious spirit, and yet I venture to herald it to-day as the long-missing "Fifth Evangel," "The Gospel according to Darwin." Instead of destroying the religious spirit, it reanimates it, and places it upon stronger foundations than ever before.

This may seem an extravagant and extraordinary statement, but it can be shown to be far from unfounded. In the first place, it restores the grand unity of the universe, and proves the fundamental harmony of its conflicting forces. There is no hanging in the balance between the forces of good and evil, no perilous and often doubtful conflict between a beneficent World Spirit and a malevolent one: no such thing as abstract or essential "evil": nothing but a magnificent scheme of glorious progress through conflict. Storm and darkness, hunger and cold, war and wanderings, nay, even pestilence and famine, are seen to be spurs to progress, mothers of invention, and the stern nurses of all the virtues. Never has the doctrine of the Old Gospel that "all things work together for good to them that love the Good" received such tremendous endorsement. Instead of gazing upon a world of blind, remorseless chance, or inevitable fate, so full of cruelty, injustice, and needless suffering, as to absolutely require the conception or invention of "another

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world," to even partially remedy its inequalities, the Darwinist sees all things and all forces moving steadily forward in one grand and gloriously beneficent scheme of advancement. Nature's only and unvarying war-cry is "Excelsior!"

The old Evangelists did at times catch glimpses of this truth from the mountain-peaks of their loftiest spiritual raptures, but it was soon lost sight of in the mist of the valley and fog of the fen, into which the churches were plunged in that palsied time which heralded the death of the great Roman Empire.

None of them, however, even dreamed of a light which should reveal a harmony and an order in that far more bitter, more hopeless and perplexing conflict which is incessantly present in the soul of man itself. Even to Paul's magnificent intellect, the only possible result is that one of the conflicting forces *must* and inevitably will utterly destroy the other. "The carnal mind is enmity against God, and is not subject to the law of God, neither indeed can it be. . . . To be carnally minded is death." In the mild radiance of the Fifth Gospel even this struggle, like every other, is seen to surely and inevitably result in progress, to which both forces are absolutely necessary. The "enmity" between them is merely that between the steam-chest and the driving-wheel in the great engine, or, more accurately, between the panting young giant in the cylinder and the piston-rod, each fiercely asserting itself against the other, and between them driving the great wheel. Browning has caught the same ray of dawn when he cries:

> "As the bird wings and sings
> Let us cry, "All good things
> Are ours, nor soul helps flesh more, now, than flesh helps soul."

Our passions and appetites are seen to be the great driving forces of our nature, and even the term "animal," as applied to them, carries with it no stigma of degradation; on the contrary, it suggests much that is brave, faithful, and self-denying. By far the longest, and not by any means the least noble part of our pedigree lies outside of the human family.

One of Darwin's greatest services was the proving that our

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moral impulses are derived, not from education nor external revelation, nor from the cold calculations and experimental deductions of "refined selfishness," according to either Bentham or Spencer, but from the warm and beautiful family affections, those ties of blood, whose golden links are alike binding upon the dove upon its nest, the deer in its covert, the lioness in her lair, and the mother by the hearthstone. The courage, the patience, the cheerfulness, the affections, that are in us are just as essentially "carnal" as are the "lusts of the flesh" and the "pride of life," and what is more, are more numerous and more powerful. Our deepest and strongest instincts in the long run are found to be on the side of "right."

The most exquisite result of this perception is a delicious sense of harmony and sympathy with nature and all that she contains. The world is no longer either "vile" or "unfriendly" in either its human or its physical aspects. "The Prince of the Power of it" has disappeared; all men of all races become brethren upon the common ground of the great, noble, primitive instincts, and even the beasts of the field and the fowls of the air are glowing with that "touch of nature" which "makes the whole world kin." The only thing in it that we could profitably alter is our own conceited, babyish selves.

Another proof of the inspiration of the Fifth Gospel is the calm and rational view which it enables us to take of death. To remove the fear of this has been a leading aim of all former revelations, but it is to be doubted whether they have not the rather intensified it, as they all unite in characterising it as the King of Terrors, the bitterest of evils, and the great enemy of the race.

The new light pierces these grisly, ghostly draperies, woven of fear and darkness, and shows behind them a gentle, painless, grandly-beneficent process of nature, by which the old is tenderly and reverently laid away to dissolve and reappear in the new.

Bracken dies and enriches the mold so that the anemone, violet, and the primrose may lift their dainty heads and scatter their perfume through copse and glen. Here is the Resurrection of the Body. Nothing is lost, but much is gained by the change.

The Mexican aloe lives a century, scatters its myriad seeds,

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then peacefully fades and dies, but its seeds take root upon its very grave, and give birth to other winged seeds, and so on through thousands of centuries. The vital spark has never once gone out, but burns with a brighter, richer, intenser glow in each succeeding generation. The primitive aloe is still alive and in a fuller, richer sense than ever before. This is Life Eternal, and what is better, Life Improving. Is not this a nobler, higher, more unselfish conception than that of an indefinite prolongation of our own petty, personal existence? This is an immortality worth having, for it provides for progress.

We are immortal physically in the course of nature, and mentally and morally in our influence, so far as this is for good. All that is true, all that is good in us and in our influence, will survive to all the ages: all that is false and base will be ruthlessly crushed and destroyed, ground into powder by the mills of the gods. It is not a question of whether we, as a whole, will be "saved" or "lost" but of how much of us.

Even if I have been heard this far without indignant interruptions, a dozen voices which can no longer be restrained, now burst out with the question, "But what possible claim to the title of a 'Gospel,' a 'Good News,' can be made by a revelation, the chief factor and very essence of whose 'plan of salvation' is a fierce conflict of physical force, a contest of tooth and claw, in which of necessity mere brute strength and selfishness must prove the victorious qualities?"

But is this last apparently self-evident conclusion, a logical one? It most emphatically is not! And, further, strange as it may seem, is flatly contradicted by the facts. Not only has the decrease of selfishness and the growth of the affections been one of the most prominent features in the upward development of the forms of being, but it has also been a most important factor in that progress. The supremacy of intelligence in the struggle for existence is universally admitted, and the chief training-school, if not the very birth-place of this intelligence, is in the care for others, first inspired by parental affection.

Nothing but the lowest degree of intelligence or development

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is possible without affection. The crocodile, the shark, and the viper are models, not only of cruelty and ferocity, but of stupidity and dulness. It is no mere coincidence that that great kingdom of living forms whose distinguishing and proudest characteristic is the possession of a milk-gland (a purely *altruistic* organ) should far outrank all others in beauty, vigor, and cerebral development. If they could be said to have any rivals in this last characteristic, it would be those patient but brilliant little toilers, the ants and the bees, whose whole existence is literally a slavery to, or martyrdom for, others.

War and conflict are extraordinary breeders of intelligence, but co-operation and protection are even greater. Not only are mammals far superior to all the other classes of life of living forms because they suckle their young, instead of leaving them to the tender mercies of the waves and the sun, but among them by far the most intelligent and most secure from hostile attack are those which group themselves together in more or less firmly-organised packs or herds.

Compare for a moment the dog, the horse, the elephant, with the tiger, the bear, the wild boar. Indeed an accurate classification of the intelligence and perfection of living forms could be made upon the basis of the degree of care they take of their offspring, and of unselfish interest in their kind. The same truth holds good through the different grades of the human family itself. The mere fact that the weak cannot command justice, not only stamps any tribe as barbarous, but just as certainly keeps it so, and as we go down the scale, we finally reach a point where justice, humanity, and even family affection sink to the very lowest ebb, and with them inexorably culture, intelligence, and fighting power. The very name of the "man-of-the-woods," the "*homo silvaticus*," "salvage," "savage" has become a synonym for cruelty and ferocious indifference to the rights of others. The savage is the very incarnation of aggression, remorseless selfishness, the *beau ideal* of the man most likely to "survive in the struggle for existence" according to popular and theological conception, but does that make him even the best fighting-man in the world? The question answers itself. A

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mere handful of civilised troops can scatter swarms of savage bowmen or even riflemen, simply by virtue of their confidence in one another. Selfishness is a great force, but affection is a greater. Sweetness, and light, and love, and beauty abound in the higher types, both animal and human, because they are emphatically the winning qualities in the upward struggle.

Stronger far than the crashing sweep of the hurricane or the thunderous rush of the storm-stirred Atlantic, keener and more penetrating than the blackest and bitterest frost or the jagged spear of the lightning is the sweet, golden sunshine, the loveliest and the strongest thing in the world. Beauty and morality are abundantly able to take care of themselves in the fiercest struggle without any assistance from either academies or religions.

Let no one, however, imagine for a moment that a flabby æstheticism or weak amiability can fill the requirements for survival. Far from it. Valuable and powerful as are love and beauty, the one virtue which is absolutely indispensable, and separated from which they are of little avail, is courage; clear, indomitable, inexhaustible. Though the former are unquestionably the controlling and moulding influences of progress, the latter is the great positive motive force. The one unpardonable sin is cowardice. Kind intentions, without the courage to carry them into effect, are of but little value either to their object or their possessor. Courage is not only the basis, but the very mother of the virtues. The thoroughly brave man is almost never cruel, treacherous, or untruthful. Its absence is not only the provoker, but the very essence of the majority of the vices. It is cowardice that literally makes the liar, the cheat, the traitor; courage, the Washington, the patriot, the reformer.

In spite of his harsh features and rude manners, this fierce, reckless, battle-loving, but warm-hearted old Titan is clearly the chief of all the virtues, instead of a creature to be ignored or even discountenanced, except in certain "moral" forms, as he is regarded by that effeminate and rose-water essence which many Christians extract from the Fourth Gospel.

One of the strongest claims of the Fifth Gospel is the light which it throws upon that problem, "The Origin and Relations of

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Evil." By its rays evil is seen, and can even be demonstrated to be mainly one of the necessary accompaniments of the development of Good into Better. If movement is to occur, it must be possible in all directions, and the power of advancing inevitably carries with it the possibility of retreat. The possibility of growth must include that of decay. Evil is the shadow thrown by the sunlight of the good. Good is positive and absolute; evil is negative and relative. Almost every evil, viewed broadly and attentively, is seen to be at bottom mainly a relative or temporary absence of good, and in many cases, repulsive as it may be at first sight, to be ultimately beneficent in its nature.

More than this, much of what we term evil is a necessary part of the scheme of progress. To use a mechanical illustration, not only is falling an indispensable corollary of, or antithesis to, rising, but also an essential factor in forward motion. That incarnate poetry of motion, the flight of the lordly eagle, consists of a quick, short dash, with a few score strokes of his powerful wings to a dizzy height, followed by a circling, swooping, triumphant descent on motionless, outstretched pinions, a veritable riding upon the wings of the wind, covering half a country-side in its sweep. Here progress is attained, not so much by the rise, as by the long, sweeping descent which follows it, and *both* movements are alike indispensable.

To soar aloft merely to brave the eye of the sun-god, or to excite the admiration and reverence of the rest of the feathered tribes, as the classic myth of the kingly bird supposes, would be simply a fruitless and foolish waste of energy; and yet in the spiritual realm, many a pinnacle of saintliness, many a state of ecstasy, has been attained from highly similar motives, and proved equally barren of results. Much of what we term absolute good would be sterile unless mixed with apparent evil. The whole process of human locomotion, not only physical but mental, is literally a series of interrupted falls. Our only chance of advancing is to fall in the right direction and keep at it. Our only struggle should be, not to avoid falling, but to fall forward.

Of all the innumerable forms of evil probably none is so obtru-

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sively self-evident, or so universally denounced and deplored by philosophers of every system, priests of every creed, and observers of every age, as pain. On its presence and frequency alone have been founded most of the doubts and denials of the goodness of God, or the benevolence of the universe. It is generally accepted as almost pure evil, and by its mere presence, a standing reflexion upon the intelligence and competence of the Great Architect. The sight, or even thought, of suffering is abhorrent to us, and we are sure that "Providence" ought not to "permit" it in any form. But is not this, after all, a somewhat short-sighted and childish way of regarding the question? Pain is indeed hard to bear, and harder to look upon, but is there no harvest which its sharp sickle reaps? Of a surety there is, and a golden one, which can be gathered by no other means.

First and foremost of all, pain is the great danger-signal of nature, the spark struck from the clash of the organism against its environment. Heed its warning, avoid or remove its cause, and all will be well; neglect it, and a worse thing will befall us. It is the cry of the frightened tissues for help, and there is usually plenty of time for this to reach them if we send promptly on hearing the alarm. Without pain, in times of danger, we should be half dead before we knew we were ill. Cut the nerve which supplies a rabbit's eye and lids with common sensation, leaving everything else untouched, and what is the result? The eye soon becomes suffused, then the crystal cornea becomes clouded, next inflamed, and finally suppuration sets in, and the eye is lost. What can have caused this, for the sight was still perfect, the lids uninjured and active as ever, and the circulation unimpaired? Simply the fact that sensation being destroyed and pain prevented, the lids did not know when or how to close, nor the lachrymal glands when to secrete, and the delicate cornea was dried and cracked by the air and rasped by the dust till it blazed up into fatal inflammation. The presence of pain is distressing, but its *absence* is fatal.

Again, it is impossible from a philosophic point of view to ignore the fact that pain, or the dread of it, has been, and yet is, an extraordinary, a most powerful and constant stimulus to progress.

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Take for instance the milder forms of it, known as discomfort, such as hunger, cold, etc., and what an important part of our actions do they even yet determine. How much work would we do if we were suddenly removed from all fear of them? Fully two-thirds of the turrets and battlements of that magnificent pile which we call modern civilisation have been reared under the lash of these stern but beneficent task-masters. Considered as a motive power alone, hunger has few equals.

If necessity be the mother of invention, then pain is the father of scientific discovery. So long as the influences of our surroundings and the workings of our own internal mechanism are productive of pleasurable or indifferent sensations, we are content to lie at ease, like a basking cat in the sun, or like the lotus-eaters "careless of gods and men," without troubling our heads for a moment about the nature, structure, or causes of these things. "Let well enough alone" is our motto. Let discomfort occur, however, and we are at once acutely interested in finding out all about them, and science is born. The healthy man doesn't know he has such a thing as a stomach, the dyspeptic doesn't know he has anything else. In the realm of morals, the "sweetness" of the "uses of adversity" has been universally admitted, while in that part of the physical field which terms itself the spiritual, the value, nay, even essential, meritoriousness of suffering has been so sadly exaggerated, that I almost fear to bring discredit upon my argument by alluding to it.

And here is where the Fifth Gospel gently but decidedly parts company with the Fourth. Although it goes even further in the direction of proving the necessity and even the beneficence of pain, it stops far short of exalting mere suffering into a virtue, or regarding it as the dominant and commonest element in the lot of mankind. The essential benefit of pain lies in the avoidance of its cause, and the reward is to be reaped from the thorny barrens of discomfort by determined effort and incessant struggle and not by tame and pulpy submission. It has no sympathy whatever with the morbid delusion that suffering is *per se* purifying and exalting, and the mere endurance of it a grace; still less that the submission to it is the one principal duty of man. It declines to regard this sun-

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kissed, grass-carpeted, flower-gemmed world of ours as a "vale of tears" or "wilderness of woe," and instead of holding that the more disagreeable anything is, the more likely it is to be "good for us," it would deem the fact of any object or action being repugnant to our natural tastes and instincts as at least good presumptive evidence of its injuriousness.

It furnishes a scientific and rational basis for Pestalozzi's dictum that "we do not desire certain things because we believe them to be good, but we hold them to be good because we instinctively desire them." It unhesitatingly declares enjoyment (harmony with environment) to be the normal condition of organised being, suffering the abnormal—comfort the rule, pain the exception; in short, our appetites, impulses, and instincts are the exquisite fruits of the experience of myriads of ancestral generations. If anything about us be divine, they emphatically are, and may be, freely, boldly, joyfully followed—instead of sternly repressed and distorted.

That strange distortion of the teachings of the Master known as orthodox Christianity, which is really a mixture of one-fourth Christ, one-fourth Paul, and one-half pure superstition, regards our passions and appetites as our chiefest enemies, necessary evils, only valuable for the discipline gained in fighting them, permits their indulgence only under protest and with a sort of an air of sneaking apology, and would like to crush them out entirely were it not for the trifling drawback that life itself would be destroyed in the process. And even this consideration has been, alas, no bar to its zeal, especially in the case of other people. From this belief more than from any other have sprung those dark and disgraceful shadows of monasticism, self-torture, and persecution, which have always dogged and too often utterly dimmed its shining course.

Nature's revenge for this contemptuous treatment of her heralds and prophets is swift and signal, and the carrying out of this belief must logically, and always has, resulted in either asceticism or hypocritical licentiousness, and generally in both.

From the standpoint of the Darwinist, our passions are our best friends and trustiest servants, and our instincts and appetites our safest guides. The one may be humored too far, and the other

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followed too blindly; but in the long run they will be found to have done us at least ten times as much good as harm. Like Solomon's "virtuous woman," they will "do us good and not evil all the days of our life." This once recognised, the pleasure which comes from their legitimate gratification becomes something to be freely and frankly enjoyed as a mark of nature's approval, instead of a thing to be ashamed of, acknowledged with apologies, and indulged in with grave misgivings.

In short, joy becomes as integral a part of the Fifth Gospel as grief is of the Fourth.

The grand old Greek "joy of living" comes back in broader, manlier, more enduring form, and is of itself a sufficient reason for existing. Once more the mellow glow of the golden sunlight becomes the smile of the great heart of the universe. The mist-wreath upon the blue mountain, the silver flash of the rushing river between the rich green of the reeds, the gorgeous, crimson pageantry of the hosts of heaven in the western sky, and the amethyst light in the eye of woman, are but reflexions of His beauty; the warbling of birds, the song of the wind in the pine-forests, and the murmuring of pebbly brooks, are the echoes of the music of the spheres, and the joyous response which all these stir up in us is part of the grand sympathy of the universe, the love between those of one blood and one lineage. Nor does "Lebenslust" stop here: far from it. Deeper, but even sweeter and more lasting than any of these is the stern joy of battle, the warm throb which answers the touch of the frost-king, the breath of the storm-wind, the dash of the salt spray over the bulwarks, the plunge of the frantic steed. Best of all, the glorious ecstasy of taking our lives between our teeth, and looking danger and death in the face, of daring everything in defence of our loved ones, the fierce music of the clash of swords, and the rattle of musketry, the sweet "smell of the battle afar off." Life is a brave, red-blooded, warm-hearted, joyous thing, which needs no sickly phantasmic "after-world" to render it worth the living.

Woods Hutchinson.

University of Iowa.

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LITERARY CORRESPONDENCE.

GERMANY AND AUSTRIA.

The view which regards psychology as the groundwork of philosophy is by no means a recent one. The votaries of psychological research to-day, however, uphold this view in a slightly different sense from what was customary a hundred and fifty years ago. At that time thinkers were pervaded with the idea that it was possible to find in psychology, "as the natural science of inward experience," a court of last appeal for many hotly-agitated problems of epistemology and metaphysics. To-day considerable scepticism reigns among psychologists regarding the epistemological value of inward experience and self-observation; inquirers are now bent on introducing in their stead objective observation and experiment, and they value the investigations of psychology less for their *immediate* furtherment of other branches of philosophy than for the promising glimpses which they afford, for the first time, of exact though meagre results relative to laws of mental life. The use of experiment in psychological questions, in itself attractive, renders possible the union of several minds in the solution of accurately defined problems, as also the mutual verification of the whole subject under inquiry, of the methods employed, and of the results obtained. All this makes experiment appear as expressly designed for the professional pursuit of this branch of knowledge, according to the precedent of the other experimental natural sciences. The psychological laboratory has become one of the instruments of a well equipped university.

The more numerous and ramified, now, the special investiga-

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tions growing out of this method become, the more imperative does the necessity appear of occasionally systematising and condensing the results. Such a rallying-point Wundt's *Physiological Psychology* has been since its first appearance. Each new edition has sought to keep pace with the latest researches. But plan and groundwork of any book constitute after all an intellectual organism, which, although it can develop as a whole, yet in individual parts cannot sustain its growth at the expense of the whole. Some such idea as this perhaps suggested OSWALD KÜLPE'S *Lehrbuch der Psychologie.* After the fourth edition of Wundt's celebrated work and the second German edition of Höffding's *Psychology*, this is perhaps the most important collective treatise of the subject which we have.

A comparison with the two last-mentioned works will show clearly the character of Külpe's book. What distinguishes Külpe from Wundt is, briefly stated, the absence of a physiological and neurological part. He treats only of psychical phenomena; considering neurological phenomena only in so far as they are indispensable for an understanding of the experimental investigations. This is not a difference in point of view, at least as far as principles are concerned, but simply a division of labor. Külpe is a pupil of Wundt's, and upon the whole represents perfectly the latter's views, although deviating from him in minor details. Most of his earlier researches were prosecuted in Wundt's psychological laboratory and published in the latter's *Philosophische Studien.* The book may be termed, therefore, a direct positive outgrowth of the purely psychological part of Wundt's work. It contains a description and verification of experimental methods, and embraces the whole psychology of the senses, of representations, and of attention, throughout applying the vast stores of material accumulated by recent observations. The range of the book is precisely coextensive with that of the new experimental psychology, into the methods and results of which it affords a valuable insight. But we miss that rich and kaleidoscopic portrayal of the psychical life in all its manifold phases, that broad and deep outlook over the whole domain of philosophy, which the solution of psychological problems inevitably affords—all recognised merits of the expositions which Höffding,

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and, within more modest limits, the editor of *The Monist* in his book *The Soul of Man*, have given.

* * *

As an attempt at advancing psychology from the opposite side, namely, by purely neurological research, is to be noted a recent work by SIGMUND EXNER, the successor of Brücke to the chair of physiology in the University of Vienna. The author is already well known by his two essays in Hermann's widely used *Handbook of Physiology*, one of which treated of the cerebral cortex, and the other of the principal methods and results of psycho-physics. The first provoked considerable opposition; the second passes for an excellent survey of this difficult and intricate group of problems, although to-day it can no longer be regarded as exhaustive. Exner now appears before the public as the author of an undertaking which is likely to win the attention of every psychologist: *Entwurf zu einer physiologischen Erklärung der psychischen Erscheinungen.* (Part I, 1894.) The author regards it as his task "to trace back the most important psychical phenomena to the gradations of excitatory states of the nerves and nerve-centres, that is, to trace back everything that appears to us in consciousness as manifoldness, to quantitative relations and to differences of the central connexions of nerves and centres, in other essential respects homogeneous."

I am sorry to say that a deplorable misconception has crept into Exner's book, as some remarks of the introduction clearly show. Exner is bent on reducing psychical phenomena to neurological processes and imagines that, having succeeded in this, he will have explained them away as something superfluous, somewhat as the physiologists have done with vital force. What is the purport of this? Are the phenomena of consciousness a mere hypothesis which we make in order to explain to ourselves the physiological processes in the brain, or are they an immediate and certain fact,—indeed, the only immediate and certain fact that exists at all? The naïve materialism of the seventeenth and eighteenth centuries thought exactly as Exner does.

Exner confounds the notions "soul" and "phenomena of con-

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sciousness." It is easy enough to explain away soul as an entity, just as we explain away vital force, or the *nisus formativus*, and other personified or hypostatised abstractions; but not consciousness and its phenomena. These could not be abolished, even if we should succeed in rendering perfectly intelligible the processes by which psychical phenomena are produced by transformation from molecular transpositions in the nervous fibres and nerve-cells. But, as a fact, science has abandoned even the search after this secret. The law of causality holds between physical and physical, between psychical and psychical. But psychical and physical are not causally connected together. What we have, are two aspects of one and the same actuality—an outward aspect and an inward aspect. This monistic theory demands, that every psychical act should have a physiological correlate in the central nervous system. For this indeed anatomy, physiology, and pathology have furnished overwhelming evidence in the course of the century. But we cannot rest content with this proof of the general functional dependence of psychical phenomena on the central nervous system. The processes of the central nervous system corresponding to the psychical phenomena must be exhibited in their actual relationship, and the general conception of the parallelism carried out in all its details. This is the sole practical and scientific sense of Exner's "explanation" of psychical phenomena. The general impression of Exner's work is, that neurology is still infinitely remote from what is here characterised as its main object. The phenomena of which he seeks to exhibit the neurological parallels, are voluntary movements and sensations, perceptions, representations, and acts of intelligence. It is certainly not an accident that in the same measure in which the book advances its contents grow more and more psychological and less and less physiological; that the part which introspection plays becomes greater and greater, the range of objective observation smaller and smaller, and the whole more and more theoretical. Exner is like a traveller who attempts to penetrate into a primitive forest without more than a general idea of the direction which he is going to follow. A hundred different paths besides his are possible. Before special research has erected a line of signs and guide-

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posts any real enlargement of our knowledge on this road is scarcely to be expected.

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An exceedingly welcome enrichment of the historical literature of the philosophical disciplines is the *Geschichte der neueren deutschen Psychologie* by MAX DESSOIR, Privatdocent in the University of Berlin. The first volume of this work appeared in 1894 and covers the period from Leibnitz to Kant. The second volume is to treat of the psychology of speculative German idealism, and the third of the development of German psychology from Herbart to the present time. In view of the extremely slow progress of the excellent work of Hermann Siebeck (Giessen) on the General History of Psychology, which has only just reached the threshold of the modern epoch, Dessoir's book meets an actual want of students.

The present volume, the result of indefatigable industry and of the collation of exceedingly rich materials, is an important contribution to the history of German rationalism and its philosophy, which although familiar in a general way, are very little studied in their detailed aspects. The author seeks to develop the psychological drift of this epoch from its historical and intellectual tendencies, and to follow out the effects of this psychology on the different directions of the intellectual life. Epistemology and æsthetics, morals, law and pedagogics, the systems of medicine, the general views of life which obtained in that period: these are the special objective points of his disquisitions.

Yet the historical import of the work is rivalled by its systematic significance. The comparatively close resemblance of the various systems suggested to the author the felicitous idea of rejecting a chronological treatment of his subject and of condensing together into two introductory chapters the purely literary and bibliographical matter, so as to leave space for elaborating the views of the various authors into a systematic exposition of the psychology of the period as a whole. He gives a chapter on fundamental problems, which is followed by the subject of animal psychology, the extremely important doctrine of the psychical faculties, in all its manifold phases, and lastly, by the associational psychology. The

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different authors and schools are all made to speak in their turn. Each one of these chapters offers a picture of the whole cycle of doctrines and controversies of the period.

There is one feature of the work which will win for its author without doubt the gratitude of all foreign readers. He has incorporated systematically and premeditatedly in his work, as much of the original materials as was necessary to make his book an authoritative repository of the sources. This will be fully appreciated when we state that a large proportion of the vast literature which his book has made use of is not only forgotten, but, outside of a few German libraries like Munich, Göttingen, and Berlin, is also practically inaccessible.

Dessoir's book, now, may be characterised as a collection of systematically arranged excerpts from this literature. As such, it has not only a historical but also a material value for the psychologist. There is much patient analysis and excellent observation in the psychology of the last century, and precisely because the psychology of the present has entered upon totally different paths, much useful material for its systematic elaboration can be extracted from these old investigations.

* * *

Still another special philosophical science has noteworthy novelties to show. I refer to *ethics*. Exceedingly rich is the work of GEORGE SIMMEL, Privatdocent in the University of Berlin, entitled *Einleitung in die Moralwissenschaft* (two volumes, Berlin, 1892–1893). We are informed by its subtitle that it is "A Criticism of the Fundamental Notions of Ethics," and in fact critical reflexions and psychological analysis by far outbalance the positive results, at least if we understand ethics in the old sense, which has prevailed almost universally until now, as essentially a normative science. The author, of course, is expressly opposed to such a conception of ethics. He is of the opinion that up to now ethics has not gotten beyond the stage of abstract generality combined with homiletic discourse and the reflexions of so-called practical wisdom. For Simmel further progress of this science is to be anticipated only from an historico-psychological treatment of its principles.

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I have the impression that the author has in mind here a condition of ethics which did exist in the past, but which does not obtain at present, at least not universally. The task which French positivism began has become, through the application of the principle of evolution to ethics, a universal and unavoidable requirement. That task is the verification of the ethical norms by a broad and comprehensive induction, which shall exhibit clearly the facts of the moral history and the psychological inter-relationship of the individual and society. No one who will take up the new ethical works of Herbert Spencer and Leslie Stephen, of Laas and Jhering, of Wundt and Höffding, can possibly have the impression of standing before the abstract generality of a pure "ought," which had fallen, as it were, from heaven, or of listening to the proclamation of a "good" which has not found its justification in a retrospect over the whole historical and social development of humanity in the past.

The author is undoubtedly correct when he says that the advancement of ethics, such as we conceive it to-day, is dependent upon the development of science as a whole. Ethics is indeed not an isolated branch and needs for its construction the most varied materials, which must be gathered in the workshops of the psychologist, ethnologist, the historian, sociologist, and political economist. No one can be fruitfully engaged in all these fields at once. Yet, must we on that account renounce all claim to a universal elaboration and employment of these materials? This would be exactly the same mistake as saying that no discipline of logic nor theory of the methods of science could exist in the future, but only the methods of the separate branches; the same mistake that makes its appearance again and again in the belief that the time will come when philosophy will be ousted by the collective methods and results of the separate sciences. The more the division of the single spheres of knowledge is extended, the more will the necessity be felt of retaining or newly creating definite points of unity and reference.

Yet these doubts in the horoscope which Simmel casts of ethics do not impair the value of the researches which he himself offers. What he proposes is the exact description and analysis of all the

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complicated psychical facts and processes which answer to a few fundamental ethical notions. Simmel investigates the following cardinal conceptions: duty, egoism and altruism, ethical merit and ethical guilt, happiness in ethics, the categorical imperative, the unity and conflict of ends. All these conceptions play in every systematic construction of ethics a more or less important part; but the form and manner in which they are viewed is in most cases determined by the general suppositions from which the systematic exposition starts. In this way some factors are strongly emphasised, others are neglected; ethical construction and true psychological connexion are not always in accord.

Simmel's contribution thus constitutes an outline of a thorough revision of our fundamental ethical notions. It is not a system, not even the rudiments of a system. His criticisms, however, are extremely suggestive, and will yield rich returns to a person who seeks not so much results as profundity. And that not alone for ethical questions. For this introduction into the science of morals contains, on the one hand, much less ethics than one would expect, and on the other, much more than what is strictly ethical. It reminds us in many respects of Schleiermacher's talented work of the year 1803: *Outlines of a Criticism of Past Theories of Ethics*, by which this thinker prepared the way for his systematic works in the province of morals, and did much important service toward the formation of ethical conceptions.

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Totally different aims are pursued by ALEXIUS MEINONG, Professor in the University of Graz, Austria, in his *Psychologisch-ethische Untersuchungen zur Werth-Theorie* (1894). Meinong's analysis, unlike that of Simmel, is not devoted to the critical examination of widely ramified and complicated relations of thought, but to the exact and determinate comprehension of a single, but central, problem. This problem may be briefly stated as follows: "It is proposed to analyse and describe as exhaustively as possible the conception of value, or *Werth*, in all the varied significance which this notion has for ethics; from which analysis all the fundamental forms of elementary moral judgments are to be derived." All considera-

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tions of historical, anthropological, and evolutionary phenomena are here neglected. Nothing is sought except the simplest and most universal expression of the intrinsic laws of those special psychical phenomena which we call moral judgments.

The conception "moral" for our author is a special case of the more general conception "ethical." Meinong states the difference between the two notions as follows: "Ethics investigates what constitutes, particularly in mutual relations, the value of man for man." The object of moral valuation "is man's impersonal participation, determined by his will, in the weal and woe of his fellowmen."

It remains an open question whether this distinction can lay claim to any permanent value. It serves the author as a convenient means of sharply delimiting the subject-matter of his investigations. Within the domain thus marked off, which Meinong calls the province of the good and the bad *par excellence*, arises now a whole series of possible volitional relations which Meinong undertakes to conceive as a totality and to expound in general terms according to their various functional relations. Here is first discussed the opposition of *Ego* and *Alter*, the weal and woe of the one as well as the other. By the side of these fundamental relations stand four categories of moral valuation: the meritorious and the correct on the side of the morally good; the condemnable and admissible on the side of the morally bad. But above and beyond this, experience demonstrates that the combination of the fundamental relations *Ego* and *Alter*, weal and woe, are still far from sufficient for reaching moral valuations; that this would be possible only provided nothing but the end of a definite volition determined the issue of the moral valuation of the volition. Now this can scarcely ever come to pass in real life; for every effect has natural consequences, and to every definite end means belong which must be regarded as partial ends. If the functions indicated are to shape the full analysis of real moral judgments, the morally relevant subsidiary circumstances accompanying a definite act must also be taken into account. By employing, now, a scheme of symbolical notation for the various determinations mentioned, wherein letters are used as in algebra, or in algebraical logic, the author is enabled to express in unequivocal

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and accurately determined formulæ universally valid scheme of valuation for moral acts in the narrower sense, viz., for the relation of the Ego to the Alter with respect to the good and the bad.

I regard these elements of mathematical ethics, understanding by this term the exact deductive and universally valid derivation of moral judgments from fundamental psychological notions, as the really new and valuable feature of Meinong's book. Valuable not because anything is made clearer by the mathematical mode of expression, but simply because the applicability of symbolical mathematical notation affords us the assurance, here as everywhere, that our thought has mastered the fundamental relations of the branch of knowledge in question in its widest universality, and that we are beginning to understand not merely individual and actual cases, but all possible cases. In addition, the careful analysis of the notion of value offers important contributions to the problem of eudæmonism in ethics, and the same is true of two chapters added at the close on "The Moral Ought," and "On Responsibility and Freedom" which similarly attempt to throw new light on much-mooted questions of the idea of value. All in all it is no easy reading; a book in whose ways of thought and exposition we must completely immerse ourselves if we are to derive any profit from it, but withal a work which scientific ethics cannot afford to pass by without notice.

Naturally, this question will suggest itself in the face of the limitations which the author has laid down, Is this method capable of such extension as shall enable us to treat by its aid not only the very elementary moral problems, but also those more difficult relations of things with which the real interest of ethical decisions is usually associated? I have in mind the conflicts between obligations of law and obligations of love, between the principle of welfare and the principle of evolution, and finally, the countless difficulties which grow out of the fact that the *Alter* whose relations to the *Ego* the simple formulæ of Meinong are in search of, is not necessarily an individual but may also be a totality, a nation, or even all mankind. It is just, however, to mention that the author is fully aware of the preparatory and elementary character of his

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present performance, and that he has promised a treatment at some future time of the whole field of ethics by means of the principles here reached—an undertaking which we shall await the more eagerly as we know so well the difficulties and complexities of the problems to be solved.

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In connexion with these ethical investigations is to be mentioned, finally, the *System der Pädagogik im Umriss* which August Döring, formerly a practical educationist, now professor of philosophy in the University of Berlin, has recently published (1894). The present work may be regarded as a practical or technical sequel to a former work of the author's, entitled *Philosophische Güterlehre* (1888), which undertook to attack the problem of optimism and pessimism by exhaustive psychological investigations into the possibility and conditions of happiness, and which seeks a fresh justification for the old but much contested reconciliation between happiness and moral merit.

The present work may be regarded as the outcome of the idea that the possibility of happiness in this sense depends on the enhancement of the ethical culture of the individual, and that this in its turn is entirely the work of education. Döring comprehends the object of education in its broadest and noblest sense. His notion of education embraces the physical as well as the psychical development of man, breeding as well as instruction. It is his effort, apart from all actually existing conditions and educational arrangements, to portray a purely conceptual or rational ideal of such an education, which shall embrace all sides of man, and which he justly and with considerable pedagogical wisdom regards as concluded at the end of the fourteenth year. About this period, along the borders of puberty, man in his fundamental traits is pretty nearly formed and his self-education and preparation for his future calling now begins on the basis of what has been already acquired. Döring does not think highly of what is done nowadays in the way of education. He is of opinion that it cannot even be determined at present what education is capable of attaining and that because the true means of education cannot as yet be put into operation to their full extent.

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The system of education which is here presented, in judicious and minutely elaborated sketches of even the most detailed parts, is conceived as existing in the general popular educational institutions of a future society in which the present defective and unregulated cooperation of parents and schools shall be replaced by the methodical and trained work of popular professional educators, among whom of course women have a place.

The author goes somewhat further than Plato in his ideal state. He demands that a perfect society should put the education of its children in the hands of persons qualified by nature and training for that task, from the very beginning of the child's life, and not let its education date from a fixed period. It is at bottom a socialistic idea. To do one's uttermost to afford to every creature that wears a human countenance equal chances and equal prospects in life, to equalise the sharp contrasts of nurture and treatment from the first breath of life,—all characteristics of the present state of affairs,—and to leave only the ineffaceable differences of innate and constitutional qualities. An educational Utopia, yet not in the form of a pedagogical novel, but in the dress of a most rigorous and sober system. However, it is not difficult to add in thought the picture of that state of society which contains within it the conditions of realising such a pedagogical ideal. This need not necessarily be a socialistic society, but certainly one in which the smallest social unit hitherto known, the family, shall have been deprived of the functions which it has exercised for thousands and thousands of years. A society in which for this very reason a thoroughgoing employment of women in the general organisation of callings shall present no more difficulties, and in which also the reasons which forced the society of earlier stages of civilisation to impress upon marriage the character of exclusiveness and indissolubility on grounds of justice, shall have largely disappeared.

Are we approaching such a goal? The question is not for discussion here. A literary correspondent is not called upon to be a prophet. I shall only remark that the value of this severely constructed and finished work of Döring's is entirely independent of the idea of a future realisation of a pedagogical Utopia. A finely

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thought-out ideal always exercises a regulative influence on the relations of actual life, and the teacher as well as the educator will be able to learn much from Döring's work, even though he may regard an unqualified rationalisation and socialisation of education as neither possible nor desirable.

In closing I may be allowed to mention a work which no doubt will be received with sympathy by the readers of *The Monist*. It is a collection of popular lectures on the theory of evolution, and its significance for our general conception of life, which BENJAMIN VETTER, the well-known German translator of Herbert Spencer's *System of Philosophy*, delivered before a mixed audience at Dresden. As Vetter died shortly afterwards, these lectures were collected by a friend of his and published under the title of *Die moderne Weltanschauung und der Mensch* (1894). Instead of the final revision which Vetter himself had planned, was substituted an examination of the manuscript by Ernst Haeckel, whose pupil Vetter had been, and who has written a cordial preface on the author and his work. Haeckel refers expressly here to his booklet, *Monism as a Bond of Reconciliation Between Religion and Science*, which was written almost simultaneously with these lectures, and which sketched in broad outlines Haeckel's philosophical view of the world. The mere fact that the celebrated naturalist has expressly characterised Vetter's lectures as a completion and extension of this sketch, will be a sufficient recommendation of Vetter's book for all Haeckel's friends. With a great command of the collective results of natural science, which he understands how to make exceedingly plain, is united in him the endeavor to bring nearer to the human heart the monistic view of the world, which has been so often censured by its opponents for its lack of comforting power. His work is pervaded with the thought to which also *The Monist* is dedicated, that it is possible to shape scientific knowledge into a religion if we understand by this idea nothing more than the fervor and enthusiasm with which the vista into the cosmos and its eternal becoming and the place of man in the developmental process of nature fills us.

There are not over many books in German literature which undermine so inexorably the phantasms of the old myth-forming re-

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ligions, and understand how to unite so sagaciously new ethical ideals with purely scientific conceptions of the world. And in a time when dualism and mysticism in the most varied forms are making such strenuous efforts to filch from humanity the results of that intellectual labor which has been achieved in the four centuries since the Renaissance, and, under the illusory pretence of a higher wisdom and a purer insight, to set us back into the childhood of thought, into illusion and superstition, such courageous and enthusiastic expositions are welcome allies to the friends of free thought and of a purely scientific view of the world.

FRIEDRICH JODL.

PRAGUE.

FRANCE.

The discourses pronounced at the French Academy afforded me occasion to speak of Taine. Two little books bring before us to-day the figure of Renan: one by M. RAOUL ALLIER, *La philosophie d'Ernest Renan*,[1] the other by M. GABRIEL SÉAILLES, *Ernest Renan, essai de biographie psychologique*.[2] The best way to comprehend these two opposed types of mind is comparison. Both shone at the same time in the firmament of French thought, and death took both away together—more cruel in the case of Taine, who had not achieved all that he gave promise of, and more kind in the case of Renan, whose decline was becoming apparent. The latter, too, had been a favorite of life. His first bold stroke had won for him celebrity, and he saved himself by a course which for others usually means ruin.

Rebels against the Church are sure to succumb in the struggle, unless they are fully emancipated. Renan was emancipated, and in his case rebellion was dispensed with. Taine was unable to de-

[1] F. Alcan, publisher.

[2] Perrin & Co., publishers.

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rive the like advantage from his philosophical boldness. He threw himself with might and main against a powerful school. But philosophical systems do not offer the same resistance that religious dogmas do. The range of philosophical ideas escapes the common run of readers. The public does not judge a man by such enduring qualities; moreover, for them the insubordination of a monk is a far more alluring spectacle than the free struggles of the intellect: people always scent in such affairs a slight trace of scandal. For retaining the curiosity of the world it is requisite, no doubt, that the actor should have the qualities of the character he plays. Renan possessed these in a marvellous degree. His gentleness was made up of resistance, his mind of subtlety. He did more than fill a part already played; he created a part of his own. One additional piece of good fortune which he had was the mysterious respect which the student of Hebrew inspires. People saw him shine at the surface; they did not sound his depths. This art he was adept in—of presenting to the reader ripe grapes carefully packed in baskets, without obliging him to undergo the hardships of their care and vintage.

Taine did not share these advantages in the same degree. Not that he neglected the allurements of colored words, of brilliant metaphors, nor that his books were not adapted to win the interest of worldly readers. But his logic had a still more imperious attraction; his thought aimed at great precision and required an effort to penetrate it. The virtuosity of Renan was facile and apparently not affected, whilst that of Taine appears slightly strained. In the latter, disdain was tinged with harshness; in the former, it bore the semblance of indulgence. Also their irony was different, striking and vigorous in Taine, gentle and at times perfidious in Renan.

Different as these two eminent men were in form, they were no less different in their ideas and in the influence they exerted. M. Allier tells us almost nothing of the direct effects produced by M. Renan, but his literary achievements he has analysed with great acumen. He shows us the lasting impression of the teachings of St. Sulpice on the thought of Renan; his incomplete instruction, and his lack of method; his conception of philosophy as an epic, or set of variations on a single theme, which the artist renews at will;

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his metaphysical view tainted with Hegel and Schopenhauer, with its God which allures and dupes us; his moral theory which substitutes the emotion of the beautiful for the notion of the good, and sacrifices virtue to the dilettanteism of art and science; his policy of desire, not of action, which leads him to his ideal of a "picturesque" world and a privileged society; and lastly, his religion, which is nothing more nor less than religious and æsthetic sentimentality.

M. Séailles adds to this portrait the need which Renan had of a certitude emanating from without, which was a remnant of his theological servitude. He emphasises again the important circumstance that the enigmatical author of the "Life of Jesus" was a Breton "crossed" by a Gascon, and he discerns in this hereditary duality the cause of the indecision which marked all his ideas.

Taine acted more on philosophical minds, Renan on literary minds. The influence of Taine, moreover, made itself manifest in two ways. As an ardent student of physiological psychology, which was just then in its infancy, he opened up by his book *De l'intelligence* the path which a large division of the French school, including M. Ribot, have since followed. As a critic and historian he applied his method in works which were addressed to a wider public, and if in this field his opinions were not accepted by the world, it sufficed that he began, and here he was in accord with Renan, a salutary reaction against revolutionary prejudices. On all sides, if we estimate him as a whole, his work was fecund; it marks an advance in our knowledge of the mind and of the social phenomena which exhibit the laws of the mind.

Can we say the same of Renan? He never made so much as the pretension, aptly remarks M. Allier, of leaving behind him "one of those systems, in developing, refuting, or correcting, which the progress of thought consists." Above all, he was a *personality*, "He provoked states of the soul, rather than diffused precise ideas." But what are these states of the soul worth? That is the question.

Brutal condemnation would be unjust. It would find no point of attack in that fluid and undulating character, in that scepticism which plays at belief, and that faith which is its own jester. The danger was that the prudent abstinence of Renan should be com-

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municated to others without the uprightness of mind which distinguished it in him, that we should have egotism without kindness, laxity without justice, sentimentality without common sense. And in fact all this is found in his cruder disciples; their feet do not fit the footwear of God. The insanity of mysticism which has invaded us made use of his name. With the ethics of Nietzsche, who is a madman, his, too, has confounded many brains. A charming genius and admirable writer he surely was, but withal the sage of the Decadence—one of those perfect masters of forgetfulness and delicate enjoyment who turn from the paths of action and enervate by a taste for vague reveries, the social aristocracy of which they are members. The wisdom of Renan is the asphyxiation of flowers without the nausea, morphine without the puncture.

M. le Marquis de Charnacé, himself a scholar and writer, has just recently written to me as follows: "I knew Renan well, having met him every week at the house of my mother-in-law (the late Countess d'Agoult). He was an artist of great power, but he had no faith in his art. He was thoroughly a child of his time, where real characters are rare. In this respect I liked Littré better, whom we also saw not less frequently. Littré left behind him a monument, etc."

The severity of these judgments will perhaps surprise some of our readers. But they must gain assent nevertheless. The extraordinary success of the illustrious deceased was only possible in virtue of the close accord of his genius with the soul of our wearied generations, and he preferred the task of gently lulling them, to that of assuming their guidance.

* * *

The book of M. CLÉMENCEAU, *La Melée sociale*,[1] is written in a different tone. Emotion, sincere, yet slightly tinged with harshness, prevails here, and pity, which we are fain to say is without tenderness. M. Clémenceau expounds in an introduction his ideas on life and the destiny of our species—ideas which are not apt to afford

[1] Charpentier, Publisher.

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man much consolation. He commits, in my judgment, the error of not perceiving that order and justice exist in the world. He never sets himself to inquire whether science should not put new and properly formulated problems in the place of those which the decaying religions have introduced; he provides no playground where the human soul has permission to move about. Following others who like him are also in error, he proclaims the injustice of the world, the horror of the struggle for life, and scarcely allows the glimpse of an illusion in his sombre doctrine. Following the affirmation of imprudent materialism comes unfortunately that of a dual-faced pessimism which counsels the two alternatives of enjoyment or despair. Think of the final disaster if the human race should follow swiftly and *en masse* the paths of the prophets! It is slower in its movements fortunately, and thinks less rapidly; it waits till the truths that have been offered to it are established and can be assimilated, and thus guards itself against drawing the last consequences of its leaders' errors. It knows the joy as well as the pain of effort, and is led spontaneously by the very necessities of life to the supreme lesson of action.

* * *

Two excellent works are offered to us in French translation.[1] The first is that of Dr. Lange of Copenhagen, translated by M. Georges Dumas. It will be remembered that Dr. Lange gave in 1885 the same answer that Prof. W. James gave the year preceding, to the question, What is emotion considered in its psychological nature? Both scholars were at one on this point, without knowing each other. The result of their analyses, which I scarcely need repeat, is that in every emotion there is an initial fact which may be an idea, an image, a perception, and even a sensation, but the emotion itself can never be more than the consciousness of organic variations induced in the body by the excitation of vaso-motor centres. In short, emotion is the subjective side of the objective states which are usually called its effects. Dr. Lange properly no-

[1] F. Alcan, publisher.

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tices in the conclusion of his little book, the different reactions which cause variation of the physical expressions of emotion according to individuals, and thus lend varied aspects to fear, anger, etc. He points out the slight emotivity of peoples that have reached a high state of civilisation, as also of the higher classes generally in society, and he explains this fact by the vaso-motor opposition which exists between the intellectual and the affective life. The proper office of education would be to suppress simple and original reflexes and to substitute in their place more elevated ones.

The second work is that of M. MARIO PILO, of Belluno, *La Psychologie du beau et de l'art*, translated by M. A. Dietrich. M. Pilo studies first the "objective factors" of the beautiful. The beautiful, he says, is that which pleases first the senses, then, and eventually, the sentiment, the intelligence, the ideality. The beautiful, accordingly, is something relative to sensibility, to reason, to the ideal which heredity and circumstances have implanted in each of us. A hierarchical scale of the beautiful will conform to the precedent facts. I have several times upheld a similar doctrine. It is opposed to the thesis of Guyau, who seeks in art a sociological instrument, to that of Cousin and Hegel, who make of it an intellectual instrument, and I do not think that it has been demolished by the criticisms of M. Lipps in Germany, nor by those of Mr. H. R. Marshall in the United States. Mr. Marshall in his *Æsthetic Principles* combats the sensorial theory. It is certainly not to be denied that the different elements of our psychical life—sensation, emotion, sympathy, intelligence, and will—are all exercised in some degree in the state of mind which constitutes the notion of the beautiful. But if we seek for what is truly the principal element of it we are constrained to attribute this to sensation, and in fact the order which Mr. Marshall follows in his classification is instructive in this regard: he emphasises the passage from what is most essential to what is less, from that which characterises or specialises the various arts to that which is common to all the arts, to all exercises of mental activity.

M. Pilo next studies the "subjective factors" of the beautiful. His classification of the arts conducts us from the physiological re-

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flex to the conscious expression of attested pleasure (criticism), and from the latter to a more or less transfigured reproduction of the thing which has pleased us (art properly so called). Art acting by suggestion, the form, he says, is the main element in it, and the more suggestive the form is in proportion to the means, the higher is the art. This is the case with poetry and with music. The work of M. Pilo is very interesting; but he is mistaken, in my opinion, in thinking that art is destined to replace religion. How can art which remains *pleasure* take the place of religion which seeks to be *knowledge*?

* * *

I shall now mention, although somewhat tardily, two other works touching the grave question of "degeneracy." The one is by M. J. DALLEMAGNE, a Belgian physician, entitled *Dégénérés et Déséquilibrés*;[1] the other by M. A. SANSON, professor of zoötechnics in the agricultural school at Grignon, entitled, *L'Hérédité normale et pathologique*.[2] We shall find in the book of Dr. Dallemagne a very complete historical *résumé*, with judicious discussions relating to the character and the limits of psychosis and neurosis. M. Sanson strives to make prominent the vague features of the idea which physicians generally have of heredity. He criticises forcibly certain current expressions such as dissimilar heredity, collateral heredity, etc., and establishes precise distinctions between individual heredity, heredity of family (this chapter is the best of the work), and heredity of race or atavism. The mistake of M. Sanson is his wrong estimate of the value of "crossing" and he would appear to push too far his hostility towards the transformist theories. However, I regard his work as excellent and very good for consultation. I would only wish to have the last part cancelled, viz., the conclusion, where M. Sanson omits to support himself on facts which he has himself discussed: Jacobin prejudice replaces here scientific deduction.

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[1] F. Alcan, publisher.

[2] Asselin and Houzeau, publishers.

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An excellent study by M. Renouvier is to be read in the *Année philosophique* (1894)[1] on the doctrine of St. Paul. The *Année psychologique*[2] also promises a rich collection.

LUCIEN ARRÉAT.

PARIS, FRANCE.

A FRENCH VIEW OF THE CHICAGO CONGRESSES.

The reports of the various French commissioners sent to Chicago by the government during the exposition of 1893 are now being issued by the Minister of Commerce. One of the most recent to appear is that of M. Louis de Chasseloup-Laubat devoted to the congresses which were held at the time of the Fair. This report is all the more interesting to us because the author confines his attention wholly to the essays, papers, and speeches contributed by our countrymen and women. "My principal aim is," he says, "to furnish a general account of the way in which Americans look at the great questions of the hour now occupying the attention of the best and most learned minds on both sides of the Atlantic." We have, therefore, in this big quarto of four hundred pages a French view of the American side of the Chicago congresses.

M. de Chasseloup-Laubat's descriptions and comments are generally written in a very broad-minded, cosmopolitan, and friendly spirit, though now and then he has not been able to throw off entirely his French prejudices and ideas. This is particularly the case where he has to do with women and their interests. Thus we find this opinion given in the introductory part of his report:

"The most unfortunate and vexatious feature of the organisation of the congresses of Chicago was the exaggerated importance given to women. Their participation was, in fact, out of all proportion to the papers and the works sent by persons belonging to

[1] F. Alcan, publisher.

[2] F. Alcan, publisher.

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the feebler sex. So also the time spent in listening to the speeches of orators in petticoats did not correspond with the value of these bits of eloquence."

And again in his comments on the Purity Congress:

"One of the reasons why nothing practical resulted from this gathering is that a certain number of very respectable ladies, belonging to various feminine associations opposed to vice, felt called upon to mix up the question of moral purity with woman's rights and to demand the political equality of the two sexes. But these two things have nothing in common. It is hard to see how giving women the ballot would make them more virtuous. As far as I know, politics has not had the tendency to render men more chaste."

M. de Chasseloup-Laubat dismisses the Woman's Congress, which was perhaps, with the single exception of the Parliament of Religions, the most largely attended of the whole series, with a single page, though he devotes over one hundred and thirty pages to the Civil Engineering Congress! And here is his concluding remark concerning this remarkable gathering: "It is very doubtful if this Congress does much for reforming legislation in a direction favorable to woman."

It would not be difficult to "answer" these criticisms, but this is not the purpose of this article; and, in fact, M. de Chasseloup-Laubat presents such a different front in a paragraph under the Government and Administration Congress, that he almost disarms counter-criticism. He says:

"It is quite true that there exists no serious reason why women, who have attained their majority, should be deprived of the right to vote. The eligibility of women to legislative functions would, however, be more inconvenient than advantageous because men would consider themselves less bound to respect women if the latter entered into the arena of politics." [The history of the last Colorado Legislature contradicts this statement, I believe.] "But there can be no doubt that dropping a ticket into a ballot-box does not in itself constitute an act opposed to woman's rôle in modern society."

The temperance reformers will find more "bones to pick" with

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M. de Chasseloup-Laubat than the woman suffragists, for, in his account of the Temperance Congress, he thus pays his respects to the Prohibitionists:

"It is astonishing that there are to be found in the United States so many fanatics having no sort of respect for the rights of others, who are all the more dangerous because they are so respectable and so convinced of the justice of their cause. . . . The anti-alcoholic monomania sometimes carries them to a point so nearly bordering on folly that one is led to ask if persons afflicted with *delirium tremens* are more wild in their ravings than many of the advocates of prohibition."

The real reason why M. de Chasseloup-Laubat is so bitter in his denunciation of teetotalers crops out in several places of his report of the Temperance Congress, as where he says: "I felt it to be my duty to combat with the greatest energy a proposal whose realisation would entail each year a loss of millions of francs to the wine growers and sellers of champagne, Bordeaux, and Saintonge."

Among "the precursors and chiefs of the temperance movement" in the United States he places, along with Father Matthew and John B. Gough, whom he imagines to be still among the living, Lincoln!

He next takes up the religious congresses which are treated very fairly. Here is what he has to say of the Catholic Congress:

"The salient point of these reunions was the confirmation of the fact that Catholicism is now undergoing an evolution in the direction of republican and democratic ideas,—one might almost say towards American ideas. It would seem as if the Papacy, uneasy over political events in Europe, were striving to find a solid support among the most powerful nation of the two Americas. After having compromised itself in the Old World by compromising the political systems with which it believed its destiny indissolubly linked, Catholicism has changed its line of conduct and has discovered that it has a grand future in the New World, where the American branch of the Church is young, enterprising, unhampered by any political past, progressive in its acts and absolutely independent because it lives on its own means,—the voluntary donations of the faithful.

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This Catholic evolution is certainly a grand and important fact, one of the capital ones revealed in these Chicago congresses."

"Of all the Chicago congresses," this Report truly says, "the Parliament of Religions attracted the most people and called forth the most comment. One saw displayed there a tolerance and respect for the opinions of others that were really admirable. If we except the sitting in which the ladies indulged in noisy protest at the defence of Mussulmanic polygamy, all opinions and all doctrines were listened to with the deference and kindness that is due earnest people defending moral ideas and exposing their conceptions of the grave problems of life and death. This is certainly an interesting and very remarkable fact, and it proves that the spirit of tolerance exists in the United States. . . . The impression produced in America by this Congress was profound, and will doubtless last for a long time, inculcating still more deeply into the nation a respect for the beliefs and opinions of others. In Europe, the results will probably be much less tangible and of minor importance. . . . The Parliament of Religions rendered a grand service to many people. It showed them that though dogmas and forms are dissimilar, morality, the basis and *raison d'être* of religions, is one; it presented to them under varied, complex, and changing appearances a unique, single, and immutable foundation. A small number of choice spirits long ago discovered this truth. The Parliament of Religions opened the eyes of thousands to it,—and this will be the greatest service to humanity rendered by this Congress."

In closing his very readable and creditable Report, M. de Chasseloup-Laubat writes:

"Whatever may have been said against these congresses through jealousy and ignorance, they were one of the most remarkable manifestations of the human intellect that has ever occurred on American soil,—that gigantic America, which is destined to assume from day to day a more considerable place in the world, in the evolution of civilisation, and in the destinies of the human race."

THEODORE STANTON.

PARIS, FRANCE.

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CRITICISMS AND DISCUSSIONS.

SOCIAL EVOLUTION THROUGH THE ETHICAL LAW.

The lucid way in which Professor Le Conte explained the initial difficulties attending the first principles of social evolution must have come as a boon to many another puzzled student of sociology besides myself. It is impossible for an earnest believer in the great destiny of man to hold as true the gospel preached by the professed sociologists, still less possible is it for an upholder of monism to adopt their materialistic views, believing, as we do, in "the spirituality of all existence." Therefore words such as those of Professor Le Conte, in his able article on "The Theory of Evolution and Social Progress," in your issue for July, are, indeed, welcome.

There is another writer of the present day who has forsaken the ground on which the sociologists have encamped for so long, namely, Benjamin Kidd, who in his work on social evolution bears out the truth of what Professor Le Conte says of the "Wrong Direction"; he writes in his opening chapter, "The Outlook":

"Science has obviously herself no clear perception of the nature of the social evolution we are undergoing. . . . We are without any real knowledge of the laws of its life and development, or of the principles which underlie the process of social evolution which is proceeding around us."

But, on the other hand, under the heading of "Conditions of Human Progress," he says, speaking of man:

"We find him in like manner subject to laws which have governed the development of the lower forms of life, and which are merely operating in society under more complex conditions."

Those laws Benjamin Kidd calls the fundamental principles which underlie the life and development of all organic nature. In that he is merely echoing the older teaching of organic evolutionists. But again he parts company with his brother sociologists and joins issue with Professor Le Conte so far as to regard religion as a function of great import to man; he calls it "the more special and peculiar feature," for instance:

"The social system which constitutes an organic growth . . . is not the political organisation of which we form part, it is not the race to which we belong, it is

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not even the whole human family in process of evolution; the organic growth, it would appear, must be the social system or type of civilisation founded on a form of religious belief."

But unfortunately *the form* which Benjamin Kidd adopts is painfully disappointing; he formulates a religion from which reason must be entirely eliminated, nay more, in which it is really antagonistic, and we find ourselves under his arguments once again facing the old and hopeless prospect of everlasting war between religion and science—a prospect fast being blotted out by more thoughtful pictures of both walking onward hand in hand.

Curiously enough, the professed sociologists themselves admit the backwardness of their science; one excuse, and one only, can they find for it, and that lies in its peculiar difficulties; but, as Professor Le Conte has said, the difficulties would disappear, provided the sociologists had set out in the right direction. Starting on wrong principles, they cannot reach a right conclusion.

Another mistake into which sociologists have fallen finds expression in the following words. Talking of the progress of man, Benjamin Kidd writes:

"As to the nature of the progress there can also be no mistake. It is at once both inevitable and involuntary, . . . one of the commonest ideas surviving from a pre-evolutionary period is that which represents the stages of man's social progress as being steps in advance consciously and voluntarily taken."

Again:

"Left to himself this high-born creature, whose progress we seem to take for granted, has not the slightest innate tendency to make any onward progress whatever."

Compare with this the words of Professor Le Conte:

"But there is another and higher factor introduced right here (for man is more than an animal), a factor distinctive of social progress, a factor which soon becomes dominant over all others, viz., the conscious voluntary co-operation of man himself in the work of his own evolution."

Man himself *seeks* the ideal, worships the pure and holy with a conscious worship, the spiritual part of him is godlike, he is "a god though in the germ."

It has always seemed to me impossible to hold the dark necessity theory and at the same time to believe in the free will of man. In his spirit he is beyond the sphere of organic evolution, which has attained its perfection in his body, and has fitted it to contain his spirit. To what spiritual excellence man might attain, is as yet unknown; to what, if properly understood, spiritual evolution might arrive, is at present beyond our ken. We dream sometimes of man ideal and godlike. The development of his capabilities for correspondence with God by means of right evolution is the goal, the end of his race, and the law governing that right evolution is surely the ethical law, a proper knowledge of virtue, a following after holiness, an unhesitative acceptance of everything morally good and beautiful, the complete rejection at whatever cost of everything impure, corrupt, and base, all

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our actions, all our thoughts, hopes, and wishes should have but one object—the furtherance of virtue. And why? Because virtue is the law of our souls' life, and, just as vegetation obeys the law of its growth, the heavenly bodies the law of their movements, elements the law of their existence, so should man obey the law of his life, only he must do so consciously, as on a higher plane, while the others obey from necessity.

Professor Le Conte mourns the slight care and thought bestowed on love and marriage. "Alas!" he says, "how little even yet does Reason control our selection in those things." It is true and the cause is obvious. Ignoring Herbert Spencer's untrue criticism upon the value of taught virtue found in his *Study of Sociology* we must insist upon the ancient Socratic axiom that virtue is capable of being taught and once having implanted in the mind of youth a right appreciation of ideal conduct then the truth of Tennyson's lines will be apparent:

"We needs must love the highest when we see it."

If we worshipped the Beautiful and the Holy would we choose as our life companions the Unholy and the Unbeautiful? And the Ethical Law itself, upon what does it rest? What shall we find governing the fourth and highest plane? "What is the end and term of all evolution?" The knowledge of God. "This is how men get to know God—by doing His will. . . . Acts react upon souls. Good acts make good men, just acts just men, divine acts divine men," says Professor Drummond. God, Heaven, and Religion lie in our hearts, salvation does not come "through this ism or that ism," through Roman Catholicism or Protestantism, not alone does it dwell in churches or chapels, but in the souls of men lies its possibility.

We must not limit the number of avenues leading up to God. Personally being amongst those who have found their highest conception of the Beautiful and Holy in the religion of Christ, yet it would be far from me to assert that such belief was the only acceptable one in the eyes of the great Father. All religions preaching love and peace, not war and bloodshed, all religions teaching man to believe in the majesty of his spiritual birth, in the greatness of his destiny, have surely in them the principles of man's social evolution. Some have doubted whether our civilisation has not introduced a greater number of evils than it has cast out. Those evils, and they are many and great, have entered because of the ignorance which prevails regarding *the laws* which should govern man. The realisation of the penalties incurred by the breaking of a humanly appointed law is forced upon us, but how many realise the penalties which we incur in the breaking of the laws of our life.

Christ himself tells us a little about an Ideal Civilisation, an Ideal Society, when he speaks of the "Kingdom of God." Professor Drummond in his *Programme of Christianity* takes up Christ's words regarding His kingdom and says, "the sense of belonging to such a society transforms life," it gives, he writes, "a note of universality to even the humblest works we do, a sense of comradeship, a promise of success."

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Now when we look at the idea of a Society, governed by the principles of organic evolution, as the sociologists conceive it would be, it becomes so terrible that we have the late Professor Huxley saying:

"Even the best of modern civilisation appears to me to exhibit a condition of mankind which neither embodies any worthy ideal nor even possesses the merit of stability. I do not hesitate to express the opinion that if there is no hope of a large improvement of the greater part of the human family. . . . I should hail the advent of some kindly comet which would sweep the whole affair away as a desirable consummation."

Herbert Spencer thinks an adequate cause can be found for religion in the idea of ghosts and ancestor-worship, while Mr. Grant Allen somewhere describes it as a "grotesque fungoid growth."

To us religion is the key to problems connected with the soul of man which are unsolvable in any other way.

On the one hand then we have the doctrine of the Organic Evolutionists with its cruel necessities, war, strife, and oppression, on the other hand the doctrine of the evolution of the soul which for principles has love, peace, pity, generosity, and unselfishness. One promises man a glorious future, a diviner life, a noble aim; the other places him on a level with the beasts, and thinks that destruction would be a fitting consummation for all his kind.

EMILIA DIGBY.

TICEHURST, SUSSEX, ENGLAND.

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BOOK REVIEWS.

DAS DER MENSCHHEIT GEMEINSAME. Auch eine christlich-sociale Studie. By *Leopold Besser*. Bonn: Emil Strauss. 1895. Pages, 119.

The utterances of this pamphlet are distinguished by considerable common sense, insight, and straightforwardness of presentation. The discussions relate mainly to Germany, but consider aspects of life and thought which are fundamental and which possess a significance for the reflective people of every nation. If not impregnable, the statement of the author's philosophical position is at least clear and simple; while in the application of his views he is eminently practical and constantly at the heart of the questions he seeks to solve. Whether his propositions are stated with sufficient definiteness to be put into immediate execution is another question, and one which is withdrawn from criticism by the fact that the author aims wholly at the formation of ideals. He contends that it is not so much the actual economic facts, such for instance as the glaring contrasts of poverty and wealth, etc., which cause the social and economic troubles of to-day, as the ideas and impulses which have hold of our brains. His purpose is to point out the way by which man can avoid falling a victim to superstition and transcendentalism, and to prevent the formation of ideas which destroy and poison the springs of life. One of these erroneous ideas is the traditional notion of religion. By "knowledge" the author understands inference from real experiences to causes which in their turn also are within the reach of real experience—i. e., perceptible by the senses; by "faith," on the other hand, he understands belief in inferences which presuppose causes *not* within the reach of experience. Now religion, man's feeling of his dependence on a power determining his life but beyond the reach of his sense-experience, belongs really in the latter category, whilst historically and actually it has been placed in the former. Hence, the innumerable clefts in human conduct and thought. Hence opposing parties have arisen whose differences can be composed only by the discovery and adoption of *Das Gemeinsame*—the common interests and the common possessions of man.

The author's discussions touching the way of practical social reform are based on the conclusions of biology, which discovers the sufficient and real ground of social existence in the triune fact of man, wife, and child as the social element of so-

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ciety. The second and principal corollary of biology is the obligation devolving on parents of equipping the individual child with such capacities for labor as shall bring the rewards necessary for the maintenance of a proper human existence. To this end the family must possess property. On this point the author lays greatest stress; primarily he thinks the acquisition of earthly goods to be more necessary even than the acquisition of intellectual goods; the social question will find its solution only in the *individual reform* of the *laboring* individual. In this respect his views are opposed to communism and are centred in the idea of a high excellence of individual ability. It is the gospel of labor and *the just reward* of labor that he propounds—in which way alone man can pursue the noblest aims of life and fully participate in the common spiritual possessions of mankind—its knowledge, love, and justice.

There is a salutary and elevated vein of patriotism in the book, which is opposed to all clericalism and pins its faith on the house of Hohenzollern as having the power and the will to save Germany from its present social and spiritual distresses. The author quotes this sentence from his highest ideal of a princely ruler, Frederick the Great, as being the quintessence of all ethics and all Christianity—the real Sermon on the Mount. "Our life is a fleeting passage from birth to death. The mission of man during this brief space of time is to labor for the welfare of society, of which he is a part." One can well see that the author's words have, as he tells us, been written with "all the warmth of his heart's blood, at least with so much as age has left him" (it has left him much), and it is to be hoped that the best portion of what he has said shall neither be "decried," nor "silenced by disregard." T. J. McC.

PSYCHOLOGIE DES GLAUBENS. By *Gustav Vorbrodt*. Göttingen: Vandenhoeck & Ruprecht. 1895. Pages, 257. Price, M. 7.

This book insists upon the importance of psychology for religion. The author has unquestionably discovered the Archimedian δός μοι πού στῶ of theology, and convinced of the importance of his mission, addresses his book to the "hard-hearing' theologians, to professional psychologists, and to the enemies of religion. He has read Ribot, Binet, Wundt, and others with profit, and presents their views with fair accuracy. But while he apparently adopts some of the most striking results of modern psychology, e. g., as to the nature and origin of the ego (pp. 110–127) he retains, at the same time, some traditional notions of theological dogmatism that are irreconcilable with the new view. He goes so far as to speak of the personality of God, concerning which he says that it is absolutely independent of our planet, and it is wisest not to ponder on the subject, as it is conceivable that God's personality manifests itself under other than terrestrial conditions and in other ways. Any one who takes the allegory of God's personality seriously, will fall into gross misconceptions, which are but little less pagan than polytheism, for God is not an individual being, but is suprapersonal. God is not a great world-ego that loves his creatures, but God is (as Christ tersely expressed it) himself Love; God is not the maker of law

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and order; but God is himself Law and Order. He is not the legislator of morality, but he is the eternal standard and norm of morality. We cannot enter into a detailed discussion of the problems touched upon by Vorbrodt, as this would involve a disquisition on the very basis of his faith, which, in spite of many points of contact, is hostile toward a monistic positivism, which, as all science must do, takes its stand upon facts. When we discard belief, preserving faith, which latter, in accordance with the original Greek and Hebrew terms, means character, moral strength, and confidence in moral ideals, his notion of faith appears to be "belief," and he declares that "belief is a moral duty which is rejected only by those who prefer to obey the vices of their lower ego!" (See Preface, p. xxvii.) In spite of this attitude, which is antipodic to our ideas of both science and religion, we are much pleased with the spirit of Vorbrodt's book. It indicates the awakening of thought in the mind of a clergyman, and the seriousness with which he attacks and handles the psychological problem, is the first step in the direction toward the religious ideal of the future, which we call the Religion of Science. κρς.

MONADO-MONISM, OR THE PHILOSOPHY OF EXISTENCE. By *Ram Chandra Sen*. Benares, India: Amar Press. Pages, 40.

This essay is a very compact, thoughtful, and thoroughly systematic view of evolution as seen by an Oriental savant. Students of evolution would find it deeply interesting, if not otherwise, at least as a contrast to the evolution-theories prevailing in the Occident. Not that they wholly disagree,—in fact it is possible to combine the two systems,—but that Sen's theory grounds in consciousness *ab initio*—all existence is conscious, and this fact determines the movement. R. N. F.

KANT'S ERKENNTNISTHEORIE UND SEINE STELLUNG ZUR METAPHYSIK. By *Dr. Max Apel*. Berlin: Mayer & Müller. 1895. Pages, 147. Price, M. 3.

This booklet is a criticism of Kant's position, with a view to re-establishing the metaphysicism which the great sage of Königsberg had overthrown. One instance will characterise the whole treatise. In the Fourth Part, pp. 121–128, Kant's criticism of the ego-question is discussed. Dr. Apel quotes the passages in which Kant lays down the emptiness of the ego-conception that accompanies all thought, and contrasts this assertion with another statement of Kant's in which the ego is said to be consciousness, pure and simple, but *not* a species either of conception (*Vorstellung*) or perception (viz., *Anschauung*). In the second paralogism Kant presents as an argument in favor of the ego as a metaphysical unity of the subject, the proposition that if all the separate words of a verse are distributed among several persons, their isolated thought can never constitute the verse. In order to have the whole of a thought, it must become conscious in a substance that is simple. This argument Kant rejects by saying that any argument that proves the unity of thought proves only the presence of a collective unity and never an absolute unity of the subject. In Dr. Apel's opinion the evidence in favor of the absolute unity is valid;

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he censures Kant for applying to the psychic life the categories of physics. Therefore, in spite of Kant, he accepts as an analytical proposition the idea that "thought can only be the effect of an absolute unity in the thinking being."

In a similar way, Dr. Apel attacks the most important results of the *Critique of Pure Reason*, diligently quoting the most apposite passages and taking issue with the critical verdicts of Kant. Although the author frequently misses the right solution, we find that his booklet is suggestive and well written. κρς.

THE GOSPEL OF BUDDHA. According to Old Records. Told by *Paul Carus*. Third, Revised Edition. Chicago: Open Court Publishing Co. Pages, 275. Price, Cloth, $1.00; Paper, 35 cents.

Within nine months from the publication of the first edition of this work, the issue of a third has been found necessary, and translations of it have appeared in German and Japanese and are being prepared in French and Chinese. It has been very favorably received in Oriental countries, having been introduced as an English reader in Buddhist schools of Ceylon, and has met with no less favorable comment in Christian quarters. This is no doubt due to two facts—first, to its method of treatment, which is that of presenting the actual and original contents of Buddhism as they are found in the Buddhistic canon itself, and secondly, to the purpose of the author, which has not been to stir up animosities between Christianity and Buddhism, but to enable both to sound more deeply and to grasp more clearly the spirit and meaning of their faiths. He has expressed his agreement, here, with the words of Max Müller, cited by a reviewer: "If I find in cer-"tain Buddhist works doctrines identically the same as in Christianity, so far from "being frightened, I feel delighted, for surely truth is not the less true because it "is believed by the majority of the human race."

The book presents "a picture of a religious leader of the remote past with the "view of making it bear upon the living present and become a factor in the forma-"tion of the future." The majority of the passages which make up the work are literally copied from translations of the original texts; some have been modernised, others rearranged, and others abbreviated. The author himself has limited his original work to the Introduction and Conclusion, and to a few passages designed as illustrations, but all conceived in the original Buddhistic spirit. A valuable table of reference, where the reader can find the sources and the parallelisms of the Buddhistic doctrines with Christianity, a full pronouncing glossary of names and terms, and an exhaustive index have been added—all features of incalculable usefulness. Ψ.

THE TEACHING OF THE VEDAS. What Light Does It Throw on the Origin and Development of Religion? By *Maurice Phillips*. London and New York: Longmans, Green, & Co. 1895. Pages, 232.

The purpose of this book is "to answer two questions, viz., (1) what is the "fundamental teaching of the Vedas? and (2) what light does that teaching throw

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"on the origin and development of religion?" There are five chapters treating respectively of the literature, theology, cosmology, anthropology, and soteriology of the Vedas. What the spirit and character of the work are—and they are not necessarily explained by the author's being a missionary—may be judged from conclusions such as the following: "That the development of religious thought in India "has been uniformly downward, and not upward—deterioration, and not evolu- "tion; . . . that, if we could go back far enough in time, so as to reach the point "whence the deterioration began, we should find a monotheistic religion, pure and "simple; . . . that the higher and purer conceptions of the Vedic Aryans were the "results of a Primitive Divine Revelation"—a sort of survival or reminiscence. Further, "the theory of a Primitive Divine Revelation alone is capable of explain- "ing all the religious ideas of the Vedas, such as an object of worship, sin, mercy, "sacrifice, a future state. These ideas are all foreign to Nature. Sun, moon, "earth, mountains, and rivers, have nothing to do with worship, with forgiving sin, "and with preserving men from guilt. But they are quite at home in the theory "of a primeval revelation. We must believe that the most probable theory is that "which explains all the facts. The theory of Natural Evolution cannot explain all "the facts. But the theory of a Primitive Divine Revelation, whatever hard words "may be said about it as being unscientific, does explain all the facts. It tells us "that the presence of such ideas in the Vedas as God, confession of sin, petitions "for mercy, sacrifice, and a life after death, are relics of a vanishing Revelation, "held mechanically, without any comprehension of their meaning. Granting that "this is only a theory, the opposite view is no more. Between these two theories "there is, however, this difference. The one is in harmony with the teaching of a "venerable old Book, against which no weapon formed has yet prevailed; the other "is in opposition to it."

These quotations are enough to characterise the book. *μ.*

DUALISM AND MONISM AND OTHER ESSAYS. By *John Veitch, M. A.* With an Introduction by R. M. Wenley, M. A. Edinburgh and London: William Blackwood & Sons. 1895. Pages, 221. Price, 4s 6d net.

The present collection of posthumous writings by the late Prof. John Veitch of the University of Glasgow consists (1) of an essay of one hundred and sixteen pages entitled *Dualism and Monism, or, Relation and Reality*; (2) of an essay which was intended as part of a work more extensive in scope and embodying a history of the leading doctrines of the Greek philosophy with special reference to the theory that the history of philosophy is a record of "progress by antagonism"; and (3) of an essay on Wordsworth which is reprinted from *Wordsworthiana*. The first essay forms the complement of a former work by Professor Veitch entitled *Knowing ana Being*, where he criticised the Absolutist view of the world, or "the doctrine that a series of relations summed up in the phrase 'an Absolute or Infinite Self-conscious Ego' is convertible with Reality." In the present volume he deals with what he

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regards as a form of the individualistic view, viz., "that mere relations, or a collective sum of relations in something regarded as the individual consciousness, are also so convertible,"—a theory which seems to him as inadequate as the former. The discussion, which is an able and clear presentment of an important metaphysical problem, is conducted in the form of a criticism of M. Lionel Dauriac's book *Croyance et réalité*, selected by Professor Veitch as one of the clearest and best expositions of the individualistic view. The third essay on *The Theism of Wordsworth* is an interpretation of certain philosophical implications of Wordsworth's poetry and is marked by rare insight. It is reproduced as a specimen of Professor Veitch's constructive writing. Mr. Wenley, the editor, has added a brief but thoughtful introduction of thirty pages on Professor Veitch's position in philosophy, in which he has admirably characterised the teachings and personality of the man. A list of Professor Veitch's works is also given. μκρκ.

DIE GRUNDFRAGE DER RELIGION. Versuch einer auf den realen Wissenschaften ruhenden Gotteslehre. By *Dr. Julius Baumann*. Stuttgart; E. Hauff. 1895. Pages, 72, Price, M. 1.20.

The idea which Professor Baumann has propounded in this pamphlet was indicated in a former book, entitled *The Facts Which Lie at the Foundation of a Scientific View of the World and of Life*. His contention is that the results of natural science leave ample room for a scientific conception of God, but that we are prevented from reaching such a conception by a habitual tendency of the mind to idealise all notions of divine existence. His treatment falls under four heads: first, he discusses religion generally; secondly, he considers whether religion is subjective or objective; thirdly, he reviews and epitomises the development of the Christian religion as presented in Harnack's *History of Dogma*; and fourthly, he gives his own attempt at establishing a theory of God, which shall be based upon the real sciences, that is, shall be objective. His conclusions on the first and second scores are: that religion in all its forms shows a common and universal impulse to higher aims, but that despite its common traits, in its historical and traditional forms it can only offer subjective truth, that is, each religion necessarily appears to itself as the only true one. His own attempt, which claims the excellence of being free from all idealisations of the heart and will, sees in God an absolute, unitary cause which is spiritual in its essence. He bestows upon his views the appellation "scientific," because they proceed from facts, involve no self-contradictions, and revert in all their developments to facts. This so-called scientific religion, of which Professor Baumann here gives the outlines, is claimed to be the outgrowth of the present status of science, and has its affinities in the natural or rational religion of Aristotle, Leibnitz, and others. Its relation to the Christian religion is explained by reversing the advice of Augustine: "Go not without, but turn within thee; in the inward man lives truth," into the following maxim: "Turn without as much as thou possibly canst; for all inward thoughts have no other guarantee than that of

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pure subjective creations, until they have been verified from without," etc. Many of the points of the pamphlet are well made and have the rare virtue of brevity.

μκρκ.

UNTERSUCHUNGEN ÜBER DIE VERSCHIEDENEN MORALSYSTEME. By *Dr. Karl Alexander Leimbach.* Fulda: Fuldaer Actiendruckerei. 1894. Pp. 125.

Not all conduct is included, at least obviously, under the moral law; in doubtful cases, where conduct is left to man's free choice, rules are needed rendering sure ethical decisions possible. Bodies of rules of this kind are called ethical or moral systems, and they have been proposed in various forms and numbers in the history of religious philosophy. Dr. Leimbach has undertaken in this work to investigate the philosophical foundations of such systems, as they have been wrought out in the Roman Catholic theology, and from the point of view of that theology, with a view of finding some solution of the questions at issue, and of selecting from the various systems proposed one which shall meet the exigencies of all cases. He reviews the doctrines of tutiorism, probabiliorism, æquiprobabilism, laxism, and finds ultimately in the system of probabilism along with tutiorism the most truth and logical rigor. The doctrines recommended have found, he says, their highest exemplification in the life of St. Alphonsus. *u.*

OUTLINES OF SOCIAL THEOLOGY. By *William DeWitt Hyde, D.D.*, President of Bowdoin College. New York and London: Macmillan & Co. 1895. Pages, 260. Price, $1.50.

The President of Bowdoin College has sought in this little book "to point out "the logical relations in which the doctrines of theology will stand to each other "when the time shall come again for seeing Christian truth in the light of reason "and Christian life as the embodiment of love." The Greek Church, he says, "put a metaphysic in the place of religion, and paid the penalty in spiritual steril-"ity. The Latin Church put authority in the place of reason, and paid the penalty "in intellectual barrenness. Protestantism has inherited the Greek formulas with-"out the philosophy which gave them meaning, and the Latin distrust of reason "without the authority which made dogmatism effective. The remedy lies in a "reunion of vital religion with rational theology." He has called his book Social Theology, "because the Christianity of Christ and his disciples was pre-eminently "a social movement, and because we are looking at everything to-day from the "social rather than the individualistic point of view." There is much spiritual insight and considerable appreciation of the broader phases of the religious problem in President Hyde's book. In the interpretation of some dogmatic notions he shows impartiality, and, what is rarer, common sense. But the book is not altogether free from a certain technical theological bias, which appears, for instance, in the rather summary proof of the divine personality and in the author's definition of what constitutes Sonship of God. μκοκ.

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FRIEDRICH EDUARD BENEKE. THE MAN AND HIS PHILOSOPHY. An Introductory Study. By *Francis Burke Brandt, Ph.D.* New York: Macmillan & Co. Berlin: Mayer & Müller. 1895. Pages, 167. Price, $1.00.

Mr. Brandt's study is the fourth number of the Columbia College Contributions to Philosophy, Psychology, and Education, the purpose of which we have mentioned before in *The Monist*. The study gives a biography of Beneke and a relatively complete analysis of his philosophy. Its underlying thought, which is rather novel, is that "the true development after Kant (of the German idealistic "philosophy) is to be found, not in Fichte, Schelling, and Hegel, but in the philo- "sophical system of Friedrich Eduard Beneke, . . . in other words, that in the "philosophy of Beneke we have both in outcome and in method the profoundest "metaphysical insight of our century,"—a claim which Mr. Brandt properly characterises as a bold one, but which he believes the evidence of his pages will justify. As Beneke has been much neglected, curious students of philosophy will find, perhaps, in this monograph of Mr. Brandt the completest account of his philosophy in English, although we may remark that a discussion of his psychology was given in a large work on *Occult Phenomena*, published some five or six years ago by Dr. Raue of Philadelphia. μκρκ.

THE PROPHETS OF ISRAEL. Popular Sketches from Old Testament History. By *Charles Henry Cornill*, Doctor of Theology and Philosophy, and Professor of Old Testament History in the University of Königsberg, Germany. Frontispiece, Michael Angelo's Moses. Chicago: The Open Court Publishing Co. 1895. Pages, 200. Price, $1.00.

No branch of science, in the last century, has undergone such a profound revolution as that of Old Testament research. In the place of the traditional representation of the religious history of Israel has been substituted a rigorous historical mode of view, which discovers in the process in question an organic development, and assigns to each isolated event its natural position in the whole, and by reference to this whole comprehends and explains each event. At first, even professional scholars received this organic view of the Old Testament with distrust and repugnance; for it was no light task to abandon a position that for two thousand years had subsisted as the absolute truth. But by that intrinsic power of conviction which always inheres in the truth it gradually assumed increasing dominance in men's minds, and has, particularly since the brilliant and fascinating exposition of Wellhausen's *History of Israel* of the year 1878, been borne onwards in an uninterrupted and irresistible career of triumph.

For no part of the Old Testament literature has this change of view been more significant and momentous than for the prophets, whose real significance could only now be understood and properly valued. Whilst according to the traditional view the prophets merely broadened and deepened in single points the religion of Moses, which was regarded as a complete and finished system, it now appeared

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that the prophets had completely revolutionised the religion of Israel, that it was wholly through them that the national religion founded by Moses became the religion of the world, and that they prepared and fitted the religion of Israel to become the parent of Christianity.

Truths of such importance, and so recently acquired, concerning things which affect every man's dearest interests, should not be restricted to a small circle of scholars, as if constituting an esoteric doctrine; but every educated man and woman has a right to hear of and to know about them. This is the purpose which this little book is designed to serve. It presupposes no special knowledge, but seeks to give a popular presentation of its subject-matter, by explaining first the nature and import of Israelitic prophecy, indicating what in Israel's own view a prophet was, how this phenomenon is to be explained, what position it occupies in the history of the religion of Israel, what its presuppositions are, and in what manner, thus, it sheds light on the period of time preceding it. To this is added an attempt at a historical valuation of Elijah, who occupies in so far a place apart as we possess nothing written from him. Next, the productions of the prophetic literature of Israel which have been preserved are examined in the chronological order established by Old Testament inquiry as the result of profound and laborious research. The historical conditions and the contemporary environment of the various prophets are portrayed, their significance, their peculiar original achievements briefly characterised, and finally the attempt made to assign and establish for each prophet in the developmental process of the religion of Israel his logical and organic position—in what respect his influence was promotive, and in what respect reactionary; so that the little book may be viewed as a brief sketch, presenting only the salient and important outlines, of the religious history of Israel from Moses down to the time of the Maccabees. AUTHOR'S ADVERTISEMENT.

THE MESSAGE OF MAN. A Book of Ethical Scriptures. Gathered from many sources and arranged by *Stanton Coit*. London: Swan Sonnenschein & Co. New York: Macmillan & Co. 1895. Pages, 323. Price, $1.75.

"Inquire not who spoke this or that, but attend to what is spoken." In conformity with this idea, Mr. Coit has obliterated as much as possible, in the compilation of this ethical anthology, the individual traits and circumstances of the sources from which he has drawn his materials, and has sought to weld the old and the new together under fresh relations, applying to all the varied exigencies of modern life. After stating that the writings of the past are for us only sands from which each must gather out the gold-dust, he says: "But when, with no solicitude except to be faithful to his own personal want and sense of truth, the compiler has gathered the best utterances—the best for him—concerning the Moral Life of Man, he finds that he has stored up something more than a mere heap of unrelated particles even of gold, he discovers that the thought-edges of one saying match with those of another, and the emotional flush of one mounts into the warmer glow of another, as if each

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had been made for each." Many think that a thought loses its life when torn from its organic context, and it is certainly true that the weight and significance of an utterance for us depends much upon when and how it was said. Some sayings in the religious and secular literature of the world have a universal and eternal value like the formal truths of mathematics; by their very nature they contain, in abstract, symbolical formulae as it were, the condensed results of large social and ethical experience. But there are other utterances, of weight and power, too, which receive their coloring from the time and the things to which they were applied; if we take these in their literal tenor, and as applying in full force to the conditions of the present, we are apt to form narrow or extravagant judgments, and our actions will suffer accordingly. For persons who feel thus, as for those whose bibliographical tendencies are uppermost in character, and these form the larger number, Mr. Coit has supplied a general index and an index of authors and editions, giving accurately all his sources. The selections are beautiful, and, as a rule, appropriate, although in some few cases, of course, they illustrate the compiler's own opinions on modern questions, and not those of all impartial thinkers. All the best books of the world's literature have been turned to account in the compilation. *μ.*

L'ÉDUCATION. By *F. Picavet.* Paris: Léon Chailley. 1895. Pages, 232. Price, 4 francs.

La Vie Nationale is the title of a new library of social and political sciences, published by Léon Chailley, Paris, of which M. Picavet's work is the fourth volume, the three former being on *Politics*, *Commerce*, and the *Social Question*. M. Picavet has given us a very interesting and graceful little book, from which one can gain a clear picture of educational matters in France, without the expenditure of much time or labor—such a picture as every one should have who wishes to understand the history and significance of a country. The book is divided into three parts: (1) "The Past," consisting of a historical sketch of the old attempts in the direction of national education; (2) "The Present," consisting of a review and criticism of the present organisation, which, according to the author, lacks unity and cohesion; and (3) "The Future," where advisable reforms are pointed out. *μ.*

A COMPANION TO PLATO'S REPUBLIC. By *Bernard Bosanquet.* New York: Macmillan & Co. 1895. Pp. 439. Price, $1.75.

The idea of writing a companion to Plato's *Republic* was suggested to Dr. Bosanquet by Mr. Walter Leaf's *Companion to the Iliad*, and by his experience of the intense desire for a closer knowledge of Plato felt by many students who could read him in a translation only. Philosophy loses sorely by translation, and commentary, Dr. Bosanquet thinks, can do much to restore its real meaning. He has made no attempt at textual criticism, but has simply endeavored "to bring home to English readers or to novices in Greek the sort of interpretation which a tutor at Oxford or Cambridge would probably lay before his pupils." The translation to which the

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Companion is adapted is that of Davies and Vaughan, in Macmillan's Golden Treasury Series, which the commentator characterises as scholarlike and trustworthy, and of a size and cost that make it universally accessible. The book is made up (1) of a brief introduction, discussing the history and thought of the times, the life and philosophy of Plato, the domestic life of the Greeks, and the structure of the *Republic*; (2) of the commentary, following the natural divisions of the Republic as given by Jowett, where the translation is referred to by page and line; and (3) of a good Index. Vaughan's translation of the *Republic* consisting, it would seem, of three hundred and seventy pages, while this Commentary takes up four hundred and sixteen, one is at first tempted to think that the matter has been overdone. But no one who knows the difficulties and the vast extent and suggestiveness of Plato's thought will on this account be led to judge harshly of the commentator's work; for the careful study of one thinker as a means of philosophical education is more essential and fruitful than the same study and time distributed among many. "Beware of the man of one book." μκρκ.

THE MELANCHOLY OF STEPHEN ALLARD. A Private Diary. Edited by *Garnet Smith*. New York and London: Macmillan & Co. 1895. Pages, 305. Price, $1.75.

The Melancholy of Stephen Allard is a work of more than common merit. Its author was a young man of a retiring, despondent disposition, not possessing the least trace of that aggressive energy which is necessary for success in the world, but an indefatigable student, and a man of profound literary and intellectual sensibilities. The secret of his sad condition seems to have lain in a species of intellectual epicureanism. Unknown and disregarded by the world about him, lost already to others in the undistinguished crowd, he labored to lose himself. "Ignored, "I sought in turn to ignore myself. Whensoever I was released from toil, I drugged "consciousness of personality with the opiates of literature." In another place he says: "I am weary, weary of thought." Speaking of others like himself he says: "To be a man is to be self-conscious; and to be self-conscious is to be diseased. "They that are splendidly diseased, they whose disease is further complicated with "the disease of genius, imaginatively incarnate health and harmony, and are not "altogether hapless, since their melancholy is not impotent." The Diary was never intended for publication it seems, and in giving it to the world the editor has self-confessedly transgressed his dead friend's intention. The book is something in the style of Amiel's Journal, but of course does not reach the power and insight of the latter work. The author discusses all the important problems of life in a unique and broad spirit, albeit saddened and hampered by the prevailing disposition of his mind, and shows an acquaintance with thought and literature which for his years is certainly rare. Such a book, being wholly disconnected in subjects and development, should have been supplied with a good index. The editor's marginal analyses, however, help somewhat. T. J. McC.

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BIOLOGICAL LECTURES DELIVERED AT THE MARINE BIOLOGICAL LABORATORY OF WOOD'S HOLL. Summer Sessions of 1893 and 1894. Boston: Ginn & Company. 1894 and 1895. Two volumes, pages, 242 and 287.

The Marine Biological Laboratory of Wood's Holl, Mass., which is now in the sixth year of its existence, differs from its European models and precursors in the respect that it combines the functions of a research laboratory with those of a school; being designed to supplement the work of the biological department of the American high schools and colleges, while serving at the same time as a scientific centre for original investigation. It is a co-operative organisation, depending in no way upon government or sectional aid for its support but wholly on private munificence, and drawing its means and its recruits from a large and truly national association of one hundred and thirty-one colleges, universities, seminaries, academies, schools, and laboratories. So far, the success of the institution has been highly satisfactory, as is evinced by the original work and publications of its members and students, but especially by the two volumes of biological lectures before us, delivered by the teachers and investigators of the laboratory during the years 1893 and 1894. The main work of the laboratory is devoted to the general courses in zoölogy and botany, and particularly to the technical training preparatory to investigation and to the special instruction and guidance of beginners in investigation. But in these lectures, which may be regarded in some sort as the *Proceedings* of the institution, a different side of the work is presented—that of the investigators, who undertake here to review the field, and to set forth the results, of their own special labors in succinct and general terms. The lectures deal chiefly with the *unsettled* problems of the day; but a number are also concerned with the philosophical and historical aspects of biology. Thus, under the first head we have the following large list: "The Mosaic Theory of Development," by E. B. Wilson; "The Fertilisation of the Ovum," by E. G. Conklin; "On Some Facts and Principles of Physiological Morphology," by J. Loeb; "On the Nature of Cell-Organisation," by S. Watasé; "The Inadequacy of the Cell-Theory of Development," by C. O. Whitman; "Bdellostoma Dombeyi, Lac," by Howard Ayers; "The Influence of External Conditions on Plant Life," by W. P. Wilson; and "Irrito-Contractility in Plants," by J. Muirhead Macfarlane (in the volume for 1893), and "The Differentiation of Species on the Galápagos Islands and the Origin of the Group," by G. Baur; "The Embryological Criterion of Homology," by E. B. Wilson; "Cell-Division and Development," by J. P. McMurrich; and "Origin of the Centrosome," by S. Watasé (in the volume for 1894); and under the second head such articles as the following: "Dynamics in Evolution," by J. A. Ryder (1893); "A Dynamical Hypothesis of Inheritance," by J. A. Ryder; "On the Limits of Divisibility of Living Matter," by J. Loeb; "The Hereditary Mechanism and the Search for the Unknown Factors of Evolution," by H. F. Osborn; "The Problems, Methods, and Scope of Developmental Mechanics," by W. Roux, and the highly erudite articles of Prof. C. O. Whitman on "Evolution and Epigenesis,"

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"Bonnet's Theory of Evolution," and "The Palingenesis and the Germ Doctrine of Bonnet" (1894). Besides these there are descriptive and professional lectures, such as that on "The Marine Biological Stations of Europe," by Bashford Dean (1893), and one on "The Organisation of Botanical Museums for Schools, Colleges, and Universities," by J. M. Macfarlane (1894).

The citation of the foregoing titles amply suffices to mark the scope and aims of the publications of the Laboratory at Wood's Holl. They are by the foremost investigators of America and give the results of the latest thought and research in the special fields of biological science. It goes without saying that they should receive the support of a large sale, and that the work of the institution itself should be encouraged by attention and by practical financial assistance. The lectures are finely illustrated and well printed in large, clear type and on good paper. *μ.*

POPULAR SCIENTIFIC LECTURES. By *Ernst Mach*, Formerly Professor of Physics in the German University of Prague, now Professor of the History and Theory of Inductive Science in the University of Vienna. Chicago: The Open Court Publishing Co. 1895. Pages, 313. Price, $1.00.

In these days of spiritual and intellectual ferment, which is percolating even into the lowest strata of society, the scientific inquirer can have no higher ethical mission than the popularisation of the results of his science. For by whatever motives the search for truth is primarily actuated, in the end its value must be measured by its bearing on our life, ideals, and destiny. "We never know anything truly," an eminent philologist has said, himself a proficient in this art, "unless we can make it as clear as daylight to the commonest understanding"; and the example of an Euler and a Lagrange has attested this truth even in that most incredible of sciences—mathematics.

The populace, then, at least such of them as have emerged from the rabble stage, have some hope. And if that hope had never been consummated by the beautiful literature which all English readers have at their command in the works of Faraday, Tyndall, Huxley, and others, it would certainly have been carried forward a goodly way to its fulfilment by the simple and pleasing discourses which Professor Mach has given us in the first and largest part of his *Popular Scientific Lectures*, now collected into a volume for the first time. The subjects treated bear such titles as "The Forms of Liquids," "The Fibres of Corti," "The Causes of Harmony," "The Velocity of Light," "Why Has Man Two Eyes?"—all questions which are peculiarly adapted for popular presentation and which show admirably the relations of the different sciences to one another and their bearing on the practical problems and business of life. All offer advantageous points of view, and not a few, for example those on "The Forms of Liquids" and "On Symmetry" are the original presentation of new and important ideas. An article on "The Fundamental Concepts of Electrostatics" presents and explains the metrical notions which have made us masters of the difficult field of electricity.

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Not less valuable is this book for the philosopher, student, and scientist, who will find here all of Mach's uncollected writings on the theory and methods of science. There is the acute essay on the "Conservation of Energy," which is a re elaboration of the paper of 1872 on the "Conservation of Work"; the memorial address delivered before the Vienna Academy of Sciences on the "Economical Nature of Physical Inquiry," where the author has expounded his well-known theory that science is essentially an economy of thought; the inaugural address delivered on assuming the rectorate of the University of Prague, "On Transformation and Adaptation in Scientific Thought," where the ideas of Darwin are applied to explain the mode of development of science, and lines of thought are followed which closely resemble the later views of Romanes and Lloyd Morgan; and lastly Professor Mach's latest address, delivered before the German Society of Naturalists and Physicians in the autumn of 1894, "On the Principle of Comparison in Physics." Here the sweeping philosophical significance of Kirchhoff's classical definition of mechanics is set forth, and the goal of all scientific research exhibited in the clearest and most unmistakable terms. The whole forms a complete survey of the ultimate import and aim of science from points of view which it would be difficult to simplify, and which go far to rid science of its mystical and metaphysical appendages. As we see, the book seeks to accomplish, at both ends of science, that simplification on which its ideality and utility both depend. The volume closes with a discussion of the relative merits of the classics and the sciences as a means of education. Y.

LEHRBUCH DER PSYCHOLOGIE. By *W. Volkmann*. Two volumes. Fourth Edition. Cöthen: O. Schulze. 1894—1895.

Volkmann's *Text-book of Psychology* enjoys a high reputation both at home and abroad. When it first appeared in 1876 as the enlargement of the author's *Outlines*, Professor Schaarschmidt in the *Philosophische Monatshefte* characterised it as "an excellent work—unquestionably the most competent, and in a scientific regard the most important, compendium of contemporary psychology which we have." Ribot expressed himself to the same effect in the *Revue Philosophique*, and a critic of the *Westminster Review* uttered the hope, which has not yet been fulfilled, of seeing the work in an English translation.

The praise accorded to this work is the more significant as it comes mainly from quarters which do not represent the Herbartian point of view of Volkmann. The success which the book met with was due to the solid equipment of its author and to its splendid elaboration of details. It consisted, and still consists, of what may be called a dogmatic part in which the author sets forth his doctrines in succinct and carefully weighed terms, and of a historical part in which he critically expounds the various historical attempts at solving the problems of psychology, often accompanying his elucidations with exhaustive remarks. These historical comments have been highly commended. Ribot has praised them, saying: "Their erudition is immense, as those who have used the book must fain admit. All the

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psychological doctrines from India and China to the most modern German, English, French, and Italian works are placed under contribution." William James says in his *Principles of Psychology:* "The bibliography of W. Volkmann's *Lehrbuch der Psychologie* (1875) is so complete, up to its date, that there is no need of an inferior duplicate."

Unfortunately the praise accorded to the edition of 1875 is not due to the present work, at least without qualification. The present edition, like the third of 1886, has been edited by Professor Cornelius of Halle, and, apart from a few stylistic changes, again gives the expositions of Volkmann in unaltered form. No fault, of course, is to be found with this last procedure, but the case is different with the references to the literature. The citations are incomplete from 1875 on, and not well arranged—a defect which considerably diminishes the usefulness of the book for the great majority of readers. Particularly is the foreign literature meagre, and also the choices are very poorly made. For example, the important writings on child psychology of Compayré, Baldwin, Tracy, Shinn, and Romanes are lacking altogether. Only the first part of Pérez is mentioned in the list at the end of the second volume, and of Sergi's results only a small book of pedagogical interest. Of Galton only one article from a review is catalogued, and of Binet also only one article from the *Revue des Deux Mondes*. On the other hand we meet with many writers of subordinate importance whose reception in a work of the rank of Volkmann's is unintelligible.

The present form of Volkmann's work is characteristic of the present situation of the Herbartian psychology in Germany. This psychology has made no notable advances in the last twenty years owing to the lack of men willing or competent to make use of the results of recent research; nor is any improvement in this direction to be expected. The old-time leaders, Drobisch, Strümpell, and Robert Zimmermann, have grown old and lack the requisite powers of assimilation; Theodor Vogt and Otto Willmann have applied themselves exclusively to pedagogical questions, where the neglect of psychology is already beginning to have serious effects. The only man of whom there is any possible hope is Otto Flügel, who is no longer young, and who will probably confine his work henceforward to the periodicals.

C. UFER.

ON SENSATIONS FROM PRESSURE AND IMPACT. With Special Reference to the Intensity, Area, and Time of Stimulation. By *Harold Griffing, Ph. D.* New York and London: Macmillan & Co. Pages, 88. Price, 75 cents.

Mr. Griffing's thesis constitutes the first number of the new series of *Monograph Supplements* issued by the *Psychological Review*. The series has certainly started well. It does not lie within our sphere to offer either a criticism or an encomium of Dr. Griffing's methods and results. We can simply state that it is his object to "discuss systematically the relations existing between the intensity, area, and time of dermal stimuli, and the resultant sensations and perceptions," and to

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mention as one of his more important results that "Weber's law holds approximately for weights greater than 100 to 500 grammes, while for low intensities the probable error increases much more slowly than the stimulus." μ.

THE DISEASES OF PERSONALITY. By *Th. Ribot*, Professor of Comparative and Experimental Psychology in the Collège de France. Authorised Translation. Second Revised Edition. Chicago: The Open Court Publishing Co. 1895. Pages, 163. Price, cloth, 75 cents; paper, 25 cents.

The translation of this edition has been carefully revised throughout and embodies all the additions and corrections of the latest French edition, besides the rectification of a number of important errors heretofore overlooked. The references and footnotes have been reverified where possible, and the English citations given in the words of the originals. A complete analytical index, the lack of which so impairs the usefulness of most French and German works, will greatly enhance the value of the book both for purposes of reference and of study. It is to be remarked that the method and points of view of the work are substantially what they were in the first edition; for it is Professor Ribot's opinion—and this is important—that although the new researches in provoked alterations of personality, e. g. hypnotism, possess much significance, yet the spontaneous alterations, which form the main material of his book, still furnish the solidest data for the study of the morbid manifestations of personality. Ψ.

DIE LOKALISATIONSTHEORIE ANGEWENDET AUF PSYCHOLOGISCHE PROBLEME. Beispiel: Warum sind wir zerstreut? By *Georg Hirth*. Munich: G. Hirth's Verlag.

DIE MEHRHEIT GEISTIGER PERSÖNLICHKEITEN IN EINEM INDIVIDUUM. By *Dr. S. Landmann*. Stuttgart: Ferdinand Enke.

The author of the attractive little work first mentioned here is an associationist and seeks to show how the normal ego-consciousness is formed by co-operation of the separate centres of the cerebral cortex, while under the influence of sense-perceptions. But since the different fields of the cortex (the author calls them *Merksysteme*, or memory-groups) are not equally powerful, they do not always furnish their quota to the ego-consciousness; it may happen, in fact, that the ego-consciousness resides only in one memory-group. As we see, the author skirts very closely here Charcot's doctrine of types. Frequently, owing to unusual endowment, or owing to occasional change of circumstances, no perceptive system at all is aroused into activity; the conscious condition is then in itself the basis of absent-mindedness.

Strongly noticeable as Meynert's influence is in Hirth, it is still more so in Landmann's book. Like Meynert, Landmann also emphasises the two-fold activity of mind—viz.: its *conscious* and its *unconscious*, or better, *subconscious*, activity. The latter is the original activity and has its seat in the sub-cortical centres of the

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cerebral trunk; while the first has its organ in the cerebral cortex, where it transforms the sense-perceptions, feelings, and emotional impulses originating in the sub-cortical centres into conscious images and applies them to its further uses. In deep sleep, and in hypnosis, the author says, the whole cerebral cortex is unable to perform its functions; consequently the ego sleeps and only single sub-cortical centres are active. Man, however, has no knowledge of this activity and no subsequent memory of it. When the cerebral cortex is performing its functions, ego-consciousness exists. But the function may be associated at different times with different isolated portions of the cortex, so as not to be always the same. According as this or that part of the cortex is awake, this or that ego is present. Such, in fact, is the case in many morbid conditions. To-day, for example, the diseased subject is a Frenchman who does not know German. To-morrow he is a German and learns French with difficulty. The author adduces many instances of this kind and endeavors to explain them by his theories. C. UFER.

PSYCHOLOGIE DU MILITAIRE PROFESSIONNEL. By *A. Hamon*. Paris: Bureaux de la revue socialiste, 10 rue Chabanais. 1894. Price, fr. 3.50. Pages, 216.

The title of this work is slightly a misnomer. The book is not a psychology of the professional soldier, but a collection and exploitation of facts going to show that the armies of the great military nations of Europe are sinks of vice and crime. It is in line with the work of the new peace-leagues which finds one of its ablest exponents in Baroness Suttner. The book is in its fifth thousand, and is dedicated to Dr. A. Corre, from whom we have also received a pamphlet, entitled "Militarisme," devoted to the exposition of the same subject. M.

THE GAIN OF LIFE, AND OTHER ESSAYS. By *William Chatterton Coupland*, D.Sc., M. A. London: T. Fisher Unwin. 1890. Pp. 285. Price, 6s.

Mr. Coupland's work is so well known that a critical notice of it now may appear belated. We shall therefore merely say, for the benefit of our American readers to whose notice the book may not yet have come, that Mr. Coupland, who is the translator of Von Hartmann, and the author of *The Spirit of Goethe's Faust*, has here thrown together in a popular form, marked by high literary and exegetical qualities, his thoughts on the problems of Optimism and Pessimism. The title of the book reminds us of Dühring's *Der Werth des Lebens*, though our author's conclusions are perhaps not so positive as Dühring's. It is well to see the idea of consciousness as pain emphasised. As to the scientific importance of the spiritistic movement, we differ from the author; but this is beside the question. The main weight of Mr. Coupland's argument is for progress; so that his predilection for pessimism may be overlooked. Appended to "The Gain of Life" are five disconnected essays entitled: "The Value of Speculative Hypotheses," "Henry Thomas Buckle," "Creation and Criticism," "Laon and Cythna," "An Evolution Rhapsody." M.

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PERIODICALS.

THE PHILOSOPHICAL REVIEW. Vol. IV. No. 4.

THE ABSOLUTE AND THE TIME-PROCESS. By *Prof. John Watson.*—THE ETHICAL SYSTEM OF RICHARD CUMBERLAND. By *Dr. Ernest Albee.*—HYLOZOISM. By *Prof. W. A. Hammond.*—THE THEORY OF INFERENCE. By *William W. Carlile.*—BOOK REVIEWS.—(Boston, New York, Chicago: Ginn & Co.)

Professor Watson thinks that "there are clear indications that the reign of Agnosticism is almost over," and that the current discussions regarding the nature and knowability of the Absolute are not only seasonable but needed. His article has the form of a criticism of Mr. Bradley and Mr. McTaggart's views of the "Absolute in the Time-Process," and his own view, which is that of an Absolute which manifests itself in the Time-Process, yet is self-complete, is stated as follows: "The Absolute must be self-distinguishing and yet self-relating. . . . No process of knowledge or action can ever bring the human mind to a stage in which reality will present itself as other than that of the unity of subject and object, which is the only reality we are capable of knowing."

The considerations advanced by Mr. W. W. Carlile in "The Theory of Inference" are worth reading.

The Philosophical Review issues a "Supplement" to its June number consisting of the continuation of Dr. Erich Adickes's German Kantian Bibliography, which has been running in the *Review* for many months back. Another instalment will be issued bringing the Bibliography down to the date of Kant's death, 1804. The completeness and tremendous extent of this Bibliography leave nothing to be desired. Free to subscribers to the *Review*; sold separately, 75 cents.)

THE PSYCHOLOGICAL REVIEW. VOL. II. Nos. 4 and 5.

THE PSYCHOLOGY OF PAIN. By *C. A. Strong.*—EXPERIMENTAL INDUCTION OF AUTOMATIC PROCESSES. By *W. R. Newbold.*—WELLESLEY COLLEGE PSYCHOLOGICAL STUDIES: directed by *Mary W. Calkins.* I. Dr. Jastrow on Community of Ideas of Men and Women: *Cordelia C. Nevers.* II. Prevalence of Paramnesia: *Margaret B. Simmons.*—SENSORY STIMULATION BY ATTENTION. By *J. G. Hibben.*—SHORTER CONTRIBUTIONS: Practical Computation of the Median: *E. W. Scripture.* The Second Year at the Yale Laboratory: *E. W. Scripture.*—DISCUSSION, ETC.

SOME OBSERVATIONS ON THE ANOMALIES OF SELF-CONSCIOUSNESS (I.) By *Josiah Royce.*—ON DREAMING OF THE DEAD. By *Havelock Ellis.*—EMOTION, DESIRE, AND INTEREST: DESCRIPTIVE. By *S. F. McLennan.*—REACTION

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TIME ACCORDING TO RACE. By *R. Meade Bache.*—DISCUSSION.—(New York and London: Macmillan & Co.)

The criticisms of Mr. Strong in the first article for July, "are directed not "against the aspect theory as a theory of displeasure, but against the aspect theo- "rists' analysis of physical pain. I hold that physical pain is not a compound of "an indifferent sensation with a feeling of displeasure, but itself a sensation which "calls forth displeasure."

The experiments of Cordelia C. Nevers with classes at Wellesley contradict the results of Dr. Jastrow gained at Wisconsin, that "women repeat one another's words more than men," and that their thoughts are directed chiefly to "the ornamental, the individual, and the concrete," while men's show a preference for "the constructive, the useful, the general, the abstract."

In the September number, Dr. R. Meade Bache gives an interesting study of reaction-times with reference to race, where the order of quickness is (1) Indian, (2) African, (3) white man. The results, the author thinks, have a possible bearing on the outcome of the Jackson-Corbett boxing-match.

Articles by Princeton professors which have appeared in the *Review* may now be had in the form of brochures, under the title of *Princeton Contributions to Psychology*. The first number contains Prof. J. M. Baldwin's historical and descriptive account of *Psychology, Past and Present*, and Prof. A. T. Ormond's able disquisition on *Freedom and Psychogenesis*. (Princeton, N. J.: University Press. Price, 50 cents.)

THE AMERICAN JOURNAL OF PSYCHOLOGY. Vol. VII. No. 1.

With the September number, *The American Journal of Psychology* enters upon its seventh volume. The preceding volumes (1887–1895) have been edited by President G. Stanley Hall (Clark University). For the future, the editorial responsibility of the *Journal* will be shared by President Hall, Prof. E. C. Sanford (Clark University), and Prof. E. B. Titchener (Cornell University). A co-operative board has been formed, which includes the names of Prof. F. Angell, Prof. H. Beaunis, Prof. J. Delboeuf, Dr. A. Kirschmann, Prof. O. Kuelpe, Dr. A. Waller, F.R.S., and Prof. H. K. Wolfe. The *Journal* will be devoted exclusively to the interests of experimental psychology (psycho-physiology, psycho-physics, physiological psychology, etc.). Each number will contain, as heretofore, original articles, reviews and abstracts of current psychological books and monographs, and notes upon topics of immediate psychological importance. Contributions may be addressed to either of the three editors.

INTERNATIONAL JOURNAL OF ETHICS. Vol. V. No. 4.

FREE-WILL AND RESPONSIBILITY. By *D. G. Ritchie.*—THE EVOLUTION OF RELIGION. By *Bernard Bosanquet.*—LABOR TROUBLES—CAUSES AND PROPOSED REMEDIES. By *J. H. Hyslop.*—AUTOMATISM IN MORALITY. By *John Grier Hibben.*—SOME OF THE USES OF UNEMOTIONAL MUSIC. By *Countess Elizabeth Phelps Resse.*—DISCUSSIONS. Professor Huxley on the Relation of the Ethical to the Cosmic Process: *Dr. Frances Emily White.* Natural Law, Ethics, and Evolution: *Prof. Josiah Royce.*—GEORG VON GIZYCKI AND THE SCIENCE OF ETHICS. By *Friedrich Jodl.*—BOOK REVIEWS.—(Philadelphia: International Journal of Ethics, 1305 Arch Street.)

Mr. Ritchie accepts the definition of freedom "in the sense that the actions for which man can be held responsible are the outcome of his own conscious self,

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and not determined by external causes," but wishes to emphasise the higher and more important aspect of freedom as identical with rationality. He says: "Free-"will in the sense of incalculable, unmotived caprice would not be worth hav-"ing, even if it were an intelligible idea; free-will, in this higher sense, is the will "that can only exist by obedience to the dictates of reason. 'Where there is no "law there is no freedom,' is a sound maxim in ethics as well as in politics."

The article of Mr. B. Bosanquet is a "free sketch or impression of Edward Caird's great work on the *Evolution of Religion*."

Mr. Hyslop finds the absolute conditions precedent of all improvement of the laborer's lot in three moral requirements: "(1) prudence in marriage and family "responsibilities, otherwise the laborer simply multiplies the competition which is "his source of complaint, and the number of those who must share his product; "(2) economy in the use of his income, so as to place him upon a level of compe-"tition with the property-holder; there is no equality, and ought to be no equality, "of economic conditions between the thrifty and the thriftless; (3) co-operative "organisation against the unjust or supposedly unjust power of capital."

Mr. Hibben examines the evolutional theory of ethics and finds that "determination by reason differs radically from determination by impulse, in the sphere of sensibility alone"—a distinction which "saves us from automatism in morals."

Readers will find in Professor Jodl's article a clear characterisation of the present and recent status of ethical thought in Germany.

MIND. NEW SERIES, No. 15.

CONTEXT AND MEANING. By *Alfred Sidgwick*.—THE INTEGRATION OF MIND. By *Edmund Montgomery*.—GNOSTICISM AND MODERN PANTHEISM. By *Prof. G. J. Stokes*.—TIME AND THE SUCCESSION OF EVENTS. By *J. L. McIntyre*.—THE *Poetics* OF ARISTOTLE. By *R. P. Hardie*.—DISCUSSIONS, ETC.—(London and Edinburgh: Williams & Norgate.)

REVUE PHILOSOPHIQUE. Vol. XX. No. 6, 7, 8, and 9.

J.-M. CHARCOT: ET SON ŒUVRE PSYCHOLOGIQUE. By *Janet* (*Dr. Pierre*).—LA PHILOSOPHIE AU LYCÉE ET A L'AGRÉGATION. By *Bernès* (*Marcel*).—DU PHÉNOMÉNE PSYCHOLOGIQUE DE L'HYBRIDITÉ LINGUISTIQUE ET DU BILINGUISME. By *R. de la Grasserie*.

SUR LES ÉLÉMENTS DERNIERS DES CHOSES (Fragments inédits). By *H. Taine*.—LA MESURE DES ILLUSIONS VISUELLES CHEZ LES ENFANTS. By *A. Binet*.—LE TRANSFORMISME SOCIAL. By *G. Tarde*.

LES PHÉNOMÉNES ÉLÉMENTAIRES DE LA VIE. By *F. Le Dantec*.—OBSERVATIONS COMPARATIVES SUR LA RECONNAISSANCE, LA DISCRIMINATION ET L'ASSOCIATION. By *Bourdon*.

AUGUST COMTE: ETUDE CRITIQUE ET PSYCHOLOGIQUE (I). By *Dugas*.—LA MÉTAPHYSIQUE AUX CHAMPS ELYSÉES. By *G. Milhaud*.—UNE MORALE MATÉRIELLE EST-ELLE IMPOSSIBLE? By *Cresson*.—ANALYSES ET COMPTES RENDUS, ETC.—(Paris: Felix Alcan.)

Psychologists will be grateful for the account and appreciation which M. P. Janet has given of the work and personality of the late Dr. Charcot. In his remarks on linguistic hybridity and bilingualism M. de la Grasserie claims to find significant and rare psychological phenomena. He cites the curious case of sexual bilingual-

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ism, which means that in some tribes the male and the female speak different dialects.

The July number contains some unpublished fragments by Taine *On the Ultimate Elements of Things*, which are clear and suggestive and seem to have been intended for a new edition of his work *De L'Intelligence*. M. Binet in his experiments on the visual illusions of children finds that there are two classes—innate and acquired illusions; the former being more striking in children, the latter in adults. M. Tarde's article is a critical but sympathetic discussion of a work of M. de Greef bearing the same title.

The conclusions of M. le Dantec's long essay on *The Elementary Phenomena of Life* (August) are as follows: "All intra-protoplasmic phenomena in unicellular or-"ganisms may take place in the absence of the nucleus if the composition of the "protoplasm could in some manner be maintained constant. All phenomena ob-"servable in the simplest organisms are to be found, although generally less com-"plicated, in inorganic matter, and their mechanical explanation is possible. The "phenomenon of assimilation alone remains mysterious, and that is the real vital "phenomenon which holds all others under its sway. It is subject to the influence "of the nucleus, and the problem is to discover how that influence is exercised. "But all the other vital phenomena without exception, including the conservation "of the specific form, etc., are dependent on the phenomenon of assimilation." The lengthy study of M. Bourdon in the same number is devoted to ascertaining whether a constant relation exists between recognition, discrimination, and association.

In the September number we have an able discussion of Auguste Comte's philosophy and personality by M. Dugas, who finds that imagination was the dominant faculty of Comte, explaining both his genius and his extravagances. M. Milhaud gives us a spirited and instructive dialogue which he supposes to take place between Protagoras, St. Anselm, Descartes, Plato, Kant, and others in the celestial regions. We have also in this number a note by M. Ch. Adam on the text of Descartes's *Regulæ ad directionem ingenii* which is to appear in the new complete edition of Descartes's works.

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK Vol. CVI. No. 2.

DIE ETHIK DES DEUTSCHEN IDEALISMUS. By *Dr. Eugen Kühnemann*.—REHMKES ALLGEMEINE PSYCHOLOGIE. By *G. K. Uphues*.—DER LOGOS BEI HERAKLIT. By *Lic. Anathon Aall*—IMMANUEL KANT UND ALEXANDER VON HUMBOLDT (II.). By *P. von Lind*.——RECENSIONEN.—(Leipsic: C. E. M. Pfeffer.)

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. Vol. I. No. 3.

GRUNDLINIEN EINER THEORIE DER WILLENSBILDUNG. By *Paul Natorp*.—UEBER WERTHALTUNG UND WERT. By *A. Meinong*.—UEBER DEN PSYCHOLOGISCHEN URSPRUNG DER POESIE UND KUNST. By *M. J. Monrad*.—ZUR KRITIK DES SEELENBEGRIFFS. Einige Bemerkungen beim Studium der Wundt'schen Psychologie. By *Allen Vannérus*.—(Berlin: George Reimer.)

Professor Natorp's article is the second part of an extended discussion of ethics, and though erudite is practical. Prof. A. Meinong's contribution is welcome, as throwing light on several issues raised in his recent work on the *Werttheorie*. The investigations of Mr. Monrad of Christiania, Norway, are intended to supple-

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ment the Aristotelian theory of the double origin of poetry and art. Mr. Vannérus of Stockholm, Sweden, has set himself the task of examining Wundt's view of the soul. According to the custom which was begun with the reorganisation of the *Archiv*, the report on the philosophical literature of Italy for the year 1893–1894 by Roberto Ardigò is printed in the Italian language.

SHI-DO-KWAI-HO-KOKU. Nos. 34 and 35. June and August, 1895.

EDITORIAL: The Great Influence of the Buddhist Religion Upon the Japanese Nation.—SCRIPTURAL: Some Good Rules Adapted to Daily Life (from Sigalovada-Sutra). Mortality in Relation to Immortality (from Sragama-Samadhi-Sutra).—SERMON: True Meaning of "Remembering the Holiness of Buddhahood" Unveiled. By *Rev. Shei-Do Vajo.*—CONTRIBUTIONS AND TRANSLATIONS: India: Her Past, Present, and Future. (Extract from a recent lecture by *S. Murayama.*)—Buddhism in Mongolia.—What They Say.—NOTES: Mr. Takakushu's English Translation of Amitayur-Dhyana-Sutra.—Rev. J. Sano's Return from Corea.—Edwin Arnold on the Late War.—Imperial Order to Give Name to a Buddhist Chief Monk.—Good Work of the Maha-Bodhi Society, India.—Rev. Nicholai's Determination Concerning the Russian Policy Toward Japan.—Professor Inone's Opinions on Buddhism Criticised.—Preaching Buddhism in a Christian Form, or Rhys-Davids's Lectures on Buddhism in Several American Colleges and Universities.—News Concerning the Buddhist Work Among Chinese and Japanese Soldiers in Manchuria, etc., etc.

EDITORIAL: True Heroism.—SERMONS: The Path That Leads to Immortality.—The Great Peace-Maker.—On the Purity of Thought, Word, and Deed.—The Upright Nature of Buddha and the Perverted Nature of Man. (These Sermons were delivered by the Editor before the Chinese prisoners in Tokio.)—LECTURES: Lectures on "Sandôkai," a Famous Work on the Teachings of the Zen or Contemplating Sect. By *S. Ouchi*, before the Young Men's Buddhist Association.—GENERAL ARTICLES: Buddhism in America (from the *New York Sun*).—Three Eminent Christians. By *Philangi Dâsa.*—Religions in Inkao, China. By *G. Hayashi.*—CONTRIBUTION: On the Buddhist Terminology. By *M. Ohara.*—NOTES: The Royal Gifts of the Siamese Buddhist Tripitaka.—Buddhist Mission in Formosa.—The *Teku-nio-i*, a work on travels in China during the late war, by a Buddhist monk.—Prof. Enriô Inonye on the Wadamore's new memory-system.—Mr. John G. Shorthall of Chicago Highly Appreciates the Beautiful Manners of Japanese Life and Attributes Them to the Good Influence of Buddhism.—Professor Kitasato on the Prevention of Cholera.—Marshal Yamagata's Study of Buddhism.—New Edition of Complete Buddhist Scriptures in Chinese, by the Obakukiohô-sha, Uji.—The Summer Lectures of the Tokio Young Men's Buddhist Association.—A Letter from the Buddhist Priest Working in Hawai.—The Professors at the Gakushu-in (High School, Tokio) Most Diligently Study the Psychology of Buddhism.—PUBLISHER'S DEPARTMENT.—(Tokio, Japan: Iwazô Sakai. Edited by Kakichi Ohara.)

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THE MONIST

A QUARTERLY MAGAZINE.

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VOL. VI. JULY, 1896. No. 4.

THE MONIST.

THE HOLINESS OF INSTINCT.

I.

THE soul of man has commonly been regarded as the battle-ground of two opposing influences. These have been often conceived as extrinsic, namely, angels and demons, Evil and Good; but more frequently as intrinsic and inherent, as elevating impulses upon the one hand, against degrading on the other; soul against body, immortal against mortal.

The latter views fall mainly into two great classes, one in which both conflicting forces are regarded as equally immanent and indigenous; the other, in which the higher or spiritual contestant is regarded as acquired or imported at comparatively late stages of development,—"breathed in," as its name implies, by some superhuman power. According to the former view, the nobler impulses of man's nature are proofs of his fall from a higher estate—remains of an Edenic condition of purity; traces of a lost innocence and holiness. This is the view of the Old Testament theology, and has probably found its highest and most beautiful expression in Wordsworth's familiar ode "On Recollections of Immortality."

"Trailing clouds of glory, we do come from God, who is our home."

The other, which is that of the New Testament, and of the Fathers and dogmatic theologians generally, is that of the two warring elements one is primitive, carnal, animal, sinful, while the other is secondary, spiritual, ethereal, holy. For example, Paul declares: "I know that in me, that is in my flesh, dwelleth no good

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thing"; urges us to "mortify the flesh with the affections and lusts," and cries out in despair: "Who shall deliver me from this dead body" (literally, "body of death"). And not only Christian theologians, but Buddhist monks, philosophers of all creeds and of no creeds, poets, mystics, dreamers of every sort and age, have revelled in it and re-echoed it until it has become a part of the household furniture of the thought of the world.

The twofold constitution of man's nature, from a mere figure of speech has come to be regarded as a literal, material fact.

The higher part, generally known as the soul, is properly assumed to have become joined with the lower part or body, much as a flower-seed might have taken root in a patch of soil. It is admitted that they are absolutely dependent upon one another, the soul for its existence, the body for its graces, and not a scrap of ponderable evidence can be adduced of the possibility of the existence of either apart from the other, and yet in flat contradiction of every other similar instance in nature, the bitterest enmity is supposed to exist between them. The impulses of the body are, above all things, to be distrusted, repressed, and dreaded by the soul. "Whatever is flesh is sin," while the aspirations of the soul are equally certain to be opposed, thwarted, and, if possible, brought to naught by the body. "The mind of the flesh is enmity against God." The most favorable view that we are permitted to take of the body is that it is a slow, stupid, extremely exasperating, but useful servant; a necessary evil which must be tolerated and even humored to some extent, because it would be difficult to get along entirely without it. This was the feeling of the monk Francis d'Assisi, who, though so full of love for all others of God's creatures that he actually conceived and carried out the beautiful idea of formally preaching the Gospel to the birds and the fishes on the lake-shore, could only find it in his heart to say of his own body, when told that it had been so weakened by fastings and vigils as to be hopelessly diseased, "I have sinned against my brother, the ass."

But even this amount of contemptuous toleration is rare. More commonly the body is described and regarded as "a dull clod," a

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"house of clay," a "sepulchre," a prison against the bars of which the imprisoned soul beats its wounded pinions until Death comes to its release. All of which is about as reasonable as if a buttercup should revile the soil which hung about its roots and forcibly prevented it from floating off across the meadow-lands with every zephyr that blew. The soil has not only produced the buttercup, but will produce, after it has passed away, thousands of nobler, grander forms than anything its shallow, little, golden pate could even conceive of. Even so the body-stuff of these ecstatic dreamers has not only produced them, dreams and all, (though how much to its own credit is to be doubted,) but has within itself grander and lovelier possibilities than even the loftiest imaginings can depict, to say nothing of the morbid, childish phantasmagoria which form the bulk of such "visions":

"Eye hath not seen, nor ear heard, neither hath it entered into heart of man to conceive the things which God hath prepared for them that love him."

But the truly "spiritually-minded" of all creeds do not stop even here. It is not enough for them to regard the body as a mere clog upon the flight of the soul, a passive hindrance to spiritual progress, but they openly declare war upon it as their soul's bitterest enemy, and as something actually sinful in itself, a creature so degraded and so essentially vicious, that to deprive it of its comforts, thwart its impulses, nay, even torture it and refuse to supply its simplest wants, becomes positively meritorious. The renunciation (in plain English, cowardly desertion) of wife and children, parents,—in short, of all family and social ties, the abstaining from food, from drink, from shelter and warmth, scourging the back with chains until the blood comes, cutting the feet into ribbons by barefoot pilgrimages over stony roads, lying stark naked upon icy pavements all night long, and even such well-nigh ludicrous "mortifications" as wearing hair shirts, walking with peas in one's shoes, refusing to wash, comb the hair, change the clothing, have been accepted as deeds of saintly odor. In fact, the principle appears to be that the more a man can humiliate and torture his body, the more he will glorify and please the God who made it.

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To such an extreme has it been carried, that not only are the selfish appetites and impulses of the body to be repressed, but even its kindly, altruistic ones. Paul commands us to "mortify the flesh, with the *affections*" as well as the lusts thereof; and even in our own century grave and learned theologians, after much deliberation, have decided that "natural goodness" and the "graces of nature" are sins in the sight of God, and even deeds of righteousness by the unregenerate will be counted against them as sins in the great day of judgment. To say that such utter antagonism between plant and soil, egg and nest, fish and water, child and mother, is not only absolutely unparalleled but flatly contradictory to everything else in nature, would be simply waste of breath, for we should be promptly informed that we were "no longer under nature, but under grace." Fortunately the retort, "Deliver us from such grace," though instinctive, is unnecessary, for the remorseless logic of events has already accomplished this. Wherever this belief has gone, it has written its progress in letters of blood. Its true nature stands revealed, in the filthy, degrading hermit-craze, in the black plague of monasticism, with its fever fits, the inquisition, Jesuitism, St. Bartholomew's Eve, and "religious" murders and persecutions of every description, and has left a broad, black, shameful brand across the pages of European history, which has come perilously near stamping a bar-sinister across the escutcheon of Christianity.

By experience utterly discredited, practically dead, it survives only in the formal theology of the modern church, though, fortunately, like many of its associates there, it has become pure theory which every one believes, but no one dreams of living up to.

The dual conception of man's nature, with its conflict between two great opposing forces, is strikingly similar to that which is held in regard to the world about us. And like it, will, I think, be found upon closer study, to be based upon a misunderstanding, a judging from appearances, without investigating the real nature of the phenomena.

When we come to weigh the question systematically "which is the greater," good or evil, passion or virtue, love or selfishness, we are promptly driven to the unexpected and even unwelcome con-

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clusion that there is no ground for debating the question, as absolutely all of these "opposites" are found to be merely varying intensities under different circumstances of one and the same set of impulses. Passion is but blameless, healthful appetite run riot. Hatred is but righteous resentment become morbid. Envy is a jaundiced desire to excel.

When it comes to specific deeds and actual instances, the essential identity becomes even more obvious. The fault of gluttony, for instance, does not lie in the impulse to eat, for that is one of the great primal appetites, without which the race would soon cease to exist. Nor in the kind of food consumed, for that may be both wholesome and nutritious; nor in the absolute amount, for that might be easily digested by a more vigorous or needy individual, but simply in the relative excess, the failure to control an originally beneficent impulse.

The crime of theft consists, not in the impulse to appropriate, for that is thrifty as applied to material objects, and saintly as directed to spiritual graces; not in the nature of the thing appropriated, nor in the position, size, or color; not even in the uses to which it is to be put, or its usefulness or uselessness to the acquirer. A man may take anything, of any value, by any means, without becoming a thief, providing that he does not know or reasonably conjecture that it belongs to some one else. He has a right to anything that he can lift, providing no one else has a prior claim. His liberty in this respect leaves off only where some one else's begins. The crime lies solely in an actual or possible injury to somebody else, a failure to balance self-love by love of one's neighbor. Adultery and fornication are indulgences of the great sexual or race-continuing instinct under unlawful conditions, in other words, under conditions which experience has shown to be injurious instead of beneficial to the race. Even the crime of crimes, murder, which with its horrid front and gory locks almost appears to have a demon-like existence of its own, an essential, self-evident atrocity, consists not in taking the life of a fellow-being, for this is justifiable,—nay, even at times commendable, in war, in defence of country or loved ones, as an officer of the law, to protect the rights and property of

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others, even in the defence of one's own life,—nor in the time, manner, or circumstances of the deed, but solely in the destruction of another's life and happiness for inadequate, selfish, or malicious reasons.

In short, the "principle" of every sin that can be mentioned, except lying, is a natural, beneficent instinct. Crime is simply lack of control. Right and wrong are broadly considered purely relative terms.

Absolutely no impulse is primarily and essentially evil or sinful, though any may become so, if uncontrolled. No action is *of itself* wrong,—the circumstances under which it takes place alone determine its moral quality. This statement will appear like a truism to all who have calmly considered the question, but its converse may not be quite so readily accepted, though equally true and important, viz., that there is no impulse so high or holy that it may not, if followed to an extreme, become both degrading and sinful, and no action so beneficent or so saintly that it may not under certain circumstances be both harmful and immoral.

Take, for instance, the noble instinct of parental affection, the purest and most unselfish flame which burns in these earthen lamps of ours, a grace which blesses alike the possessor and the receiver —the very corner-stone of morality; and yet the relentless ferocity of the tigress who has cubs, the tragedies of Lear and Père Goriot, and the hundreds of humbler instances, familiar to us all, of spoiled sons and petted daughters who have been utterly ruined and brought shame and bitterness upon their families, solely from the unreasoning devotion and blind indulgence of a fond mother or doting father, would at once suggest themselves as illustrations of how even the most sacred affection, in excess, may become immoral.

The injustice which affection may work to those outside of its scope, and the corruption even, which it will introduce into public life, have been epitomised in one word, "Nepotism."

Again, take the religious impulse,—the instinct of worship, the adoration of the mystery of the universe. It is a feeling inspiring in itself and ennobling in its tendencies. It has covered the world with its prayers in stone, the noblest architectural achievements of

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the race, its temples, its shrines, its mosques, its cathedrals. It has been the nurse of poetry, painting, and literature, and the very mother of music. But when the student of history turns to the reverse of its medal of honor, and reads its deeply-cut record of persecutions and penances, of wars and of massacres, of crusades and inquisitions, of burnings and torturings, of fanaticism, intolerance, and oppression, he is driven to admit that even this lofty impulse uncontrolled, rapidly becomes a hurtful and degrading one.

Indeed, the line is so easily crossed that he is in sad doubt at times which side of the medal should be hung outward.

Even our sense of duty, our enthusiasm for the right, which is supposed to be our most nearly divine attribute and to lift us furthest above the brute, is capable of sad perversion. It has inspired some of the noblest characters and grandest actions of history, and would appear to be the one safe and absolutely trustworthy guide for humanity. "Only follow this," we are assured by philosophers, prophets, and priests of all creeds, "and all will be well." It is probably the safest single guide, but there is not a folly or a crime into which blind and unreasoning obedience to it has not led.

It is a sense of duty which leads the Brahman widow to cast herself upon the funeral pyre of her husband. It was a sense of duty which drove the best of the later Roman emperors to persecute the early Church, that inspired the obliquities and atrocities of Ignatius Loyola, that impelled Calvin to burn Servetus, and urged the Puritan to banish and hang the Quaker, and burn and torture helpless old women. Indeed, the "higher" and more "spiritual" an impulse, the more capable of perversion it would seem, if not constantly checked by our "lower" but kindlier and healthier instinct and affections. If it were not for the vigorous and incessant opposition of our bodily tendencies, our spiritual ones would precious soon exterminate the race.

Which are really the "higher"? Morality, like sanity, is everywhere and always a question of balance, of control, of moderation.

Love of self impels us forward until we are checked or deflected by the other great natural instinct, second only to it in power, love of others, beginning with love of offspring and extending and broad-

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ening to love of the family-circle, the clan, the nation, the race. For every passion nature has provided an affection as a counter-check; for every spring of action, a balance-wheel. Nay, more, if one passion becomes overbearing, all the others unite to oppose it. The path of Goodness, Sweetness, and Light is most surely reached and best followed, not by the deification of any one of our impulses and tendencies, but by an intelligent and reverent balancing of the promptings of all. That the resulting motion will always be in the right direction, is the Faith of those who believe in evolution.

This brings us to the question of the source and origin of what we are pleased to term our moral sense, those instincts which influence our conduct with regard to the rights and feelings of others rather than to our own, our altruistic impulses, the "sense in us for conduct," as Matthew Arnold terms it; and here is where the ray of the Fifth Gospel becomes far brighter and more cheering than that of the Fourth.

The position of St. John is a perfectly simple one. Conscience is the direct voice of God, "the Light that lighteth every man,"—a principle far above and utterly different from anything which would possibly have developed out of poor, sinful, selfish human nature. It is to over-ride, not only the passions, but also the affections and sympathies of humanity; nay, more, that all these are utterly contrary to and in opposition to it. "Whoso hateth not father or mother, for my sake, is not worthy of me." "Whosoever forsaketh father, or mother, or wife, or children, for my sake and the Gospel's shall receive . . . Eternal Life." Every natural instinct is thus practically placed upon the side of Wrong, and Right can only be saved from defeat by the continual interposition of the Deity. Human nature, which this Deity is supposed to have created in his own image, is not to be trusted for a moment. With such a view, is it any wonder that it has been a "religion of suffering," of sadness, and of despondency. "Narrow is the gate and strait is the way that leadeth unto Life, and few there be that find it." "For if the righteous scarcely be saved, where shall the sinner and ungodly appear?"

On the other hand, we have the "utilitarian" theory of Spen-

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cer, the "greatest happiness" theory of Mill, the "refined selfishness" one of Bentham, all of which derive this exquisite faculty from the purely selfish impulses of man's nature. It is an enlightened self-interest, modified by experience, in fact. And I regret to say that modern evangelical Christianity has practically swung round to the same ground, inasmuch as the main incentive to right-doing which it urges, is the hope of escaping hell or gaining heaven.

Compare all of these with the view "from a natural standpoint," developed by the Master in his immortal chapter on the moral sense in *The Descent of Man*. Here is absolutely the only conception which does not compel us to regard it as either beginning or ending in pure selfishness. How much more noble, satisfying, and adequate it is can only be appreciated on careful study and comparison with the others. The source of morality is seen to be in the social instincts and sympathies which are derived, not from tempered greediness or chastened self-interest, which has been whipped within the bounds of decency by repeated bitter experiences, but directly from the warm, beautiful, and unselfish family affections. Here is a source and a sanction as truly divine as anything imagined by John. And, best of all, it is nothing foreign or hostile to the rest of our nature, but, on the contrary, a part of it. Every other faculty of our being subordinates itself to it, and shares and glories in its triumph. So far from the lower instincts being hopelessly at war with and anxious to destroy the higher, they are their originators and faithful friends, so faithful, that in many cases they save the latter from its own excesses. There is no "crucifying" to be done, for we could not possibly afford to dispense with either. The impulses of the "flesh" within their proper limits, are seen to be just as holy as those of the "Spirit."

The love of the mother for her babe, of the boy for his careworn mother, of the husband for his sweeter self, are as divine as the devotion of the saint and the self-denial of the anchorite, and infinitely more beautiful and wholesome. No tendency can be condemned simply by calling it human; not even by stigmatising it as animal, for these beautiful, natural graces are by no means confined to the human family.

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We sometimes forget that the affections and embryo moral instincts are just as truly "animal" as are the passions and lusts. Humanity can boast of no nobler, truer emotions than the love of the doe for her fawn, or the dove for her nestlings, the reckless bravery of the bear in defence of her cubs, or the partridge in protecting her young, the fidelity of the lory to his mate, or the dog to his master.

Call the muster-roll of our virtues, and see how many of them have their origin outside the human family. What superiority dare we claim over the "brutes," the birds, the bees, the ants, in courage, in perseverance, in affection, in industry, in devotion, in patient endurance.

The pedigree of two-thirds of our virtues is far longer than the human race. They are backed by the inheritance, not merely of our whole human lineage, but by that of our infinitely longer prehuman ancestry. Their strength is drawn from the life of all the ages.

Call the roll of our vices, and see how the case stands with them. Here is the list of Paul, who was a connoisseur in such matters, judging from the number he has tabulated: "Fornication, uncleanness, lasciviousness, idolatry, sorcery, enmities, strife, jealousies, wraths, factions, divisions, heresies, envyings, drunkenness, revellings."

If for the first of these we read, as was probably intended, "prostitution," and omit such as are obviously repetitions, namely, "strife," "wraths," "divisions," "envyings," and "revellings," out of the ten that remain only three can fairly be claimed to be of animal origin,—lasciviousness, enmities, jealousies. The others are purely human accomplishments.

No animal has yet been found guilty of prostitution for hire, of drunkenness, nor for obvious reasons, of idolatry, sorcery, heresy (or the burning of the holders thereof), of factions, of hate, of gambling, of lying, of commercial swindling, and only a few of them have "risen" to the dignity of wife-beating, of cruelty to children, or of slavery.

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Take it altogether, our animal ancestors have quite as good reason to be ashamed of us as we of them. Indeed, it would almost seem as if one of the most common uses that man had made of the elevation he had attained had been to fall from it. Certainly the "higher" an impulse is, the more distressing the perversion of which it is capable. "Lilies that fester smell far worse than weeds."

The cheering thing about it is that the pedigree of two-thirds of our vices is of mushroom length; that of our virtues reaches back through all the ages. Our virtues are older than we are.

What then is the true value of instinct as a guide? Of the very highest, popular impression and ecclesiastical teaching to the contrary notwithstanding. Instinct is the crystallised experience of thousands of generations. It is the golden seed-wheat chosen of a million harvests and a myriad threshing-floors. It ranks lower than reason because less of individual volition or judgment enters into it; but as a guide it is far safer, as a spring of action far more reliable and effective, and so far as it goes, has no superior. Our life-long struggle to form "good habits," as we say, is merely an effort to change rational preferences into instincts.

The beauty, the accuracy, and the beneficence of the instincts of the lower form of life have been the marvel and the admiration of every observer and philosopher,—nay, even of theologians. Out of a thousand instances we need merely suggest the architectural instincts of bees and ants, the migratory of birds and fishes, and the chrysallis-making one of grubs. But it is calmly assumed that in our own species alone they have utterly lost their force and value. Our pride would not permit us to depend upon or even recognise them, lest we should seem to admit our kinship to "mere brutes." Fortunately for us, they still remain with us in spite of our haughty refusal to officially recognise them, and control two-thirds of our actions; and it would be to our credit and benefit every way if they controlled the majority of the remainder. Every time we neglect them we suffer. It is, of course, hardly necessary to remind you that the great mass of our most important vital movements, such as breathing, swallowing, suckling, eating, drinking, walking, etc., would be impossible without them, but beyond all this, whenever

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we can find an instinct to follow, it is safe to do so nine times out of ten, even under civilised conditions.

Ask any intelligent physician, and he will tell you that if civilised man would only follow his instincts in respect to fresh air, sunlight, exercise, food, water, bathing, etc., he would be far healthier, happier, yes, and more moral than he is. Our dyspeptic race would be better in every way, for a greater indulgence in "the pleasures of the table" (including *at least* twenty-two minutes for dinner), for more cat-like basking in the sun, for a good deal more "barbaric indolence," for more rebellion against the fiendish old Puritanic saw, that "Satan finds some mischief still for idle hands to do," for a more frequent giving way to the impulse to fling the yard-stick out of the window, and the ledger under the desk, and away to the woods, the fields, and the mountains; if the grown man would run away and "go swimmin'" as the boy does.

An excellent illustration is the case of intoxicants and narcotics. Did any one ever hear of a baby with an instinct for whiskey, or a child who enjoyed the taste of tobacco or the smell of a cigar? Tongue, nose, and stomach unite in their disapproval of all three, as the comic horror's of a boy's first smoke, and the racking headache of the freshman's spree abundantly testify. It is only by systematic and repeated repression of instinct by "reason" and "higher intelligence" that either of these habits is formed; yet we have the colossal impudence to say that a man who is reeling drunk has "made *a beast* of himself"!

And this is by no means an exceptional instance; indeed, it would not be too much to say that two-thirds of the diseases of civilisation are due to the neglect or deliberate repression of some instinct.

However valuable the instincts may be admitted to be in health, the almost universal impression is in both popular and professional circles that they are just the reverse in disease. The sick man is popularly supposed to want just those things he ought not to have, and to dislike just those things which are "good for him." And, indeed, altogether too much of both household and professional medical treatment was originally constructed on that very principle.

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Its principal reliance was placed upon "bitters" of all kinds, the nastier the better, purges, emetics, asafœtida, blisterings, bleeding, starving,—in fact, the more disagreeable a drug or process, the more violent its effects, the greater its curative power was supposed to be. Even at this day a "medicine" must be bitter or it isn't much thought of by the patient, and a "hygienic dietary" is usually constructed simply by forbidding everything that the invalid has any liking for.

The simple truth of the matter is, unflattering as it may be to our professional pride, that even up to the middle of the present century the old demon-theory of disease had far too much influence over our therapeutics. Disease was still regarded as an entity which must be driven out of the body of the patient by more or less violent or repulsive means. This distrust of the instincts in disease is not medical, but priestly. The wonderful "progress of modern medicine" has consisted very largely in getting rid of this idea. Wounds, for instance, instead of being poured full of wine, or oil, or turpentine, or other irritating substances, or burned with hot irons, or kept gaping for weeks, "to establish suppuration," or dressed with earth, cobwebs, pitch, or even excrement, are now simply thoroughly cleansed, closed as accurately as possible, and protected by the softest and lightest of dressings. In short, we simply follow our natural impulses, imitate the lower animals, and the result is that our mortality rates, after both accidents and operations, are reduced fifty, sixty, and even eighty per cent.

In fevers, for instance, the parched and gasping patient, instead of being swathed up to his neck in blankets, kept in carefully heated and darkened rooms, with doors and windows religiously closed, forbidden cold water, or indeed cool drinks of any kind, as if they were deadly poison, and systematically starved upon a "fever regimen" of slops and washes of every description, is now placed between the coolest of sheets, and with the lightest of covering, in cool, breezy, sunshiny rooms, systematically fed with the most nourishing and digestible of foods, given all the water and fruit-juice he can possibly drink, not only bathed, but even put to soak in cold water.

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Our most modern and most successful treatment of typhoid fever consists merely of a liberal milk-diet, encouraging the patient to drink at least a gallon of water a day, and plunging him into a cool bath whenever his temperature rises above a certain point. Again, we simply respond to the demands of poor, hot, thirsty nature; and by so doing have lowered the death-rate from sixteen per cent. to less than five per cent.

The value of instinct as a guide in morals is equally great, although there is here a certain amount of conflict between the individual or selfish instincts, and the social or altruistic ones. And, although it is true that the intensity of our necessary vital desires or appetites is ofttimes so great as to cause us to disregard the rights of others in their gratification, and thus violate our higher or social instincts, to sin, in theological language, yet it is also true, as beautifully pointed out by the Master, that the former are essentially temporary in their duration, and capable of but feeble recollections, while the latter are absolutely ceaseless in their action and produce by their violation lasting sensations, such as shame, remorse, loss of respect, feeling of isolation, etc., which become more vivid with each successive recollection. In fact, the higher instincts, though at the time feebler, are in the long run more than a match for the lower. It would be strange indeed if these instincts, which have *created* morals, were not still to be trusted in their domain.

What, then, is our final conclusion? That morality is natural, and instinct the holiest impulse that stirs man's bosom. Truth is mighty, and sweetness and light are winning qualities (in more senses than one). Morality has won its pre-eminence by "the right of the strongest," and has no need of assistance or protection from revelation, church, priestcraft, or state. Still less does it owe its origin or continuance to any of them. And yet almost every religion, every priestly order arrogates to itself the position of the true originator and only conservator of morality. Heaven forbid that it should rest on any such narrow and shifting foundation. Beautiful and inspiring as the spirit of worship is, and valuable and powerful as its influence, morality depends upon no one emotion or influence, but upon all the forces and pulses of nature. All the warmth of

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man's nature, all the courage, the beauty, the vigor, of animal life, nay, even the beauty of the meadows, the sweep of the rolling tide, and the glory of the dawn, are in it and behind it.

Cut it off from the influence of any one of these, and it goes halting at once. Confide it to any one of these alone, and it withers and all but disappears. Even the religious instinct, for instance, must be balanced by the affections, the necessary appetites, the common sense of the masses, or the most painful and shocking perversions will occur. Of itself one of the purest and most exalted of emotions, it has earned itself as black a record as many of the vices, simply by having frequently been given unlimited sway over man's actions. The extremes of hatred, bigotry, and cruelty into which it has been led are, alas, household words, and in hatefulness, though not in frequency, equal, if not exceed those prompted by any of the "fleshy lusts." "Our army swore terribly in Flanders," but its profanity was not to be compared in either profuseness or malignity with the maledictions of an ordinary "sacrament" of excommunication.

The wrath of the "natural man" is fully appeased by killing his enemy, or at most scalping him afterwards, but that of the "holy father" or "shepherd of the flock" cannot rest at merely burning the heretic, but must damn his soul through all eternity as well.

The *superhuman* is sure to become the *inhuman* sooner or later. How much of the cruelty, intolerance, unscrupulousness, fatuous folly, which have too often marred the whole record of the Roman Catholic Church, have been due to her management solely by a body of professedly sexless clergy, who by their unnatural vow of celibacy are cut off from all the softening, humanising, ennobling, and refining influences of family life! What can they really know of the Great All Father, who are not and can never hope to be fathers themselves!

Morality is the flower born of all the struggling impulses of lowly but warm-hearted human nature, just as the violet is of the leaf-mold, the sunlight, and the dew. Any of the influences which had a *share* in its creation, *alone* would blight it, did not the others

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come to its aid. Gentle as it is, it is irresistible and will flourish with equal placidity within our bosoms or among our ashes.

Beautiful, fragrant, and delicate though it be, it only asks the free air and sunlight of heaven, to defy alike the storm, the flood, and the tooth of time, and glorify the woodlands every spring until the sun grows cold.

WOODS HUTCHINSON.

UNIVERSITY OF BUFFALO.

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PHILOSOPHICAL TERMINOLOGY AND ITS HISTORY.[1]

EXPOSITORY AND APPELLATORY.

I.

WHOEVER has at heart the interests of genuine monism, and would see the intellectual world united and a more intimate consolidation of human effort established, will joyfully welcome every attempt to close up the gaps in the realm of opinion and to facilitate mutual understanding. For this reason, if for no other, the peculiar language of philosophy is deserving of much greater consideration than usually falls to its share. From time immemorial the complaint has been made that philosophers frequently converse in different tongues and are incapable of understanding one another, that from this source no end of controversy has arisen and the advance of the work been materially impeded. And the further complaint has been made that the obscurity and ambiguity of its phraseology has utterly estranged philosophy from common life. There has been no dearth of projects for the removal of these undesirable conditions; but it is likely that more would have been accomplished had the language of philosophy itself been more closely scrutinised and studied. On the other hand, the field of terminology holds out unusual attractions to the scholar. A technical term, a mere word and sign, taken by itself, does indeed appear a matter of little moment, and, accordingly, it is very apt to be contemned. But if there is nothing insignificant generally for

[1] Translated from Professor Eucken's manuscript by Thomas J. McCormack.

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science, the far-reaching connexions of the present subject with problems of broad interest and with the great intellectual movements of the present are so obtrusive that the fruitful issue of its pursuit cannot for a moment be doubted.

Technical terms take their rise in an intimate association, in a seemingly indissoluble union of concept and word. Things spoken and things thought, things of sense and things not of sense, are compacted by them into a unified product, and thus bear unmistakable testimony to the inward unity of the two worlds. A concept may carry on a species of existence without possessing a specific form of expression, but when such is the case it hovers like a spirit in the air and is apt to vanish again; at any rate its bodilessness prevents it from ever attaining a powerful stage of efficiency. On the other hand, a word may be current for a long time before it is taken up by science and converted into a vehicle for an idea. In such conditions there is wanting to it the significance that invests it with value for intellectual work. The union of body and mind, the intimate association of word and idea, alone creates the technical term. With the technical term a new being is born which has its own fortunes and its own history. The addition made to the subject by the word is by no means immaterial or subordinate, for a word is not empty and dead, but has a definite character, and awakens images and often emotions. There are words that affect us at once sympathetically, and others that as readily awaken in us antipathy, words that aid the idea or detract from it—felicitous and unfelicitous terms. One unfelicitous word of this class, for example, is the term *metaphysics*, the reason being that this word naturally awakens the impression that the philosophical study of first principles is concerned with something above and distinct from nature. Emotions are notably aroused by party names, because every one seeks to place his own cause in a favorable, and that of his opponents in an unfavorable light. Hobbes's remark on politics applies with equal force to philosophy (*De cive*, VII.); "solent homines per nomina non res tantum, sed et proprios affectus una significare." It is manifest, thus, that the history of terms is coincident neither with that of ideas nor with that of words.

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The scientific terms which we employ to-day as self-evident in their meaning are the results of the intellectual labors of ages. We are the debtors in this regard of the Greeks and the Romans, of mediæval scholasticism and of all the leading nations of modern times. Every single technical term, viewed in this light, may be considered as possessing a distinct individuality and may be biographically treated; it has its birth and its death, it attains prominence and becomes obsolete, or, it issues victorious from the struggle for existence and becomes the permanent possession of science. To pursue the biography of words through their principal phases is often a fascinating but not less frequently a difficult task. The first question is when and where, in what environment and under what conditions, as well as from what motives a technical term has originated. Even the outward circumstances of fact are not always easily disclosed; for the new does not always turn out to be new;[1] in the majority of cases no satisfactory explanation can be had of its origin; and at times its novelty is intentionally concealed. Furthermore, words which are subsequently in every one's mouth often occur first in extremely out of the way places. For example, the word *optimist* was probably first used by Jesuit scholars to describe the system of Leibnitz (*Mémoires de Trevoux*, 1737, February); *theodicée* was first used by Leibnitz himself in 1697 in a letter to the Italian scholar Magliabecchi; *natura naturans*—a phrase which attained exceptional prominence in the hands of Giordano Bruno and Spinoza—is taken, as Erdmann and Siebeck have shown, from the Latin translation of Averroes.

Circumstances of chance may have a large share in the production of a new technical term; and consequently the facts of its origin do not always enable us to make positive deductions as to the character of the accompanying intellectual operations. But ordinarily it is increased interest in the idea itself and a powerful sense

[1] For example, Christian Wolff (*Phil. rationalis sive logica*, Cap. III., par. 85) says): "Datur alia adhuc philosophiæ naturalis pars, quæ fines rerum explicat, nomine adhuc destituta, etsi amplissima sit et utilissima. Dici posset teleologia." With regard to *sociology* Comte (*Cours de philosophie positive*, IV., 185) says: "Je crois devoir hasarder, dès à present, ce terme nouveau."

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of its want that produces a term; a confession of faith, or even a thesis, may be wrapped up in a word. Thus there were weighty reasons why the word *deist*[1] appeared during the intellectual stirrings of the Reformation period, and why the word *rationalist*[2] arose during the English struggles for independence; why the word *pantheist* was coined in England in the beginning of the eighteenth century,[3] and why recent times also produced in England the word *agnostic*.[4] The desire to give to important ideas a convenient expression and wider circulation is the most powerful factor in the production of technical terms. Consequently, in the matter of form, considerations of beauty, and even of etymological correctness are of small importance. When Alexander Baumgarten, the pupil of Wolff, introduced the word *æsthetics* as describing the science of the beautiful, there was no lack of opposition from philological quarters, but opposition could not prevent the installation of the word. Comte's *sociology* is more barbarous still, but its practical and formal utility silenced all linguistic scruples.

It is one thing to coin a word, however, and another to get it generally adopted. To attain this last goal, a word has often a long and hard road to travel, although in other cases its adoption is exceedingly rapid, one might almost say explosive in its character. Frequently, a word which is afterwards to become the common possession of all educated men, is restricted for a long time to the narrow precincts of a school. A passage in Xenophon tells us, for example, that in his time *cosmos*, as an expression for the universe at large,

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[1] In the *épître dédicatoire* of Viret's *Instruction Chrétienne*, which appeared in 1564, we read: "Il y en a plusieurs, qui confessent bien qu'ils croyent qu'il y a quelque Dieu et quelque Divinité, comme les Turcs et les Juifs. J'ai entendu qu'il y en a de cette bande, qui s'appellent Déistes, d'un mot tout nouveau, lequel il veulent opposer à Athéisme."

[2] Lechler, at page 61 of his *History of English Deism*, says: "In Clarendon's State-papers, Vol. II., p. xii of the introduction, an entry of the 14th of October, 1646, reads: "There is a new sect sprung up among them (Presbyterians and Independents) and these are the Rationalists; and what their reason dictates them in Church or State stands for good, until they be convinced with better."

[3] *Pantheist* was first used by Toland, 1705; *pantheism* by his opponent Fay, 1709.

[4] *Agnosticism* was coined by Huxley in 1859.

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was still felt to be a strange term.[1] Lessing still treats *subjective* and *objective* as learned scholastic terms, whereas since Kant they have become securely established in common speech. The word *monism* coined by Christian Wolff only gained a limited circulation among the adherents of Hegel, and its present popularity is due to the modern theory of evolution.

As worthy of notice as its rise and adoption is the obsolescence and disappearance of a term. Conformably to the twofold motive underlying the creation of terms, the occasion of their production may reside either in the word or in the idea. The same idea can change its form of expression, or the term may grow obsolete because of the idea losing its ground. The change of the mere word is naturally less important, although in this case also there must exist good reasons why the change has occurred at a given time. Thus, there is a natural connexion between the sharp distinction drawn between mind and nature by Descartes and the reason why Robert Boyle introduced the term *materialist* to characterise thinkers who prior to that time had been called Epicureans or Democriteans.

But of greater importance, of course, is the fading away and disappearance of terms, for here we have palpable evidences of revolutions and transformations in the world of ideas. As the vocabulary of astronomy and alchemy vanished when they vanished, so the terms of philosophy lose their ground when the strata of thought disappear of which they are the expression. With scholasticism, scholastic terms also had to vanish. This last example, however, is an excellent instance also of the contrary proposition, that the fate of a term is not unconditionally bound up with that of the idea. A word which has fully established itself is a far too convenient implement, a far too powerful auxiliary to be given up lightly; and thus it comes to pass that men seek to save the word in the transformation of the idea and to adapt it to its new intellectual environment. This is what happened with the main terms of scholastic terminology broadly considered.

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[1] Xenophon, Memor. I, 1, 11: *ὁ καλούμενος ὑπὸ τῶν σοφιστῶν κόσμος.*

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After the Renaissance and the beginnings of modern philosophy had rejected this terminology wholesale, there was gradually brought about by a sort of inward transformation a renascence of scholastic terminology. How could we do to-day without words like *subjective* and *objective*, *formal* and *real*, *abstract* and *concrete*, *a priori* and *a posteriori*, *actual* and *virtual*, *individuality*, *ideal*, etc.? They are all children of scholasticism. If the meaning of terms changes thus while at the same time retaining some connexion with their earliest import, if amid all transformation such unmistakable continuity reigns, then certainly we have a right to speak of an inward history of terms,[1] and it is to be expected that this history will open a far deeper vista into the movement of thought than can their outward fortunes.

Before quitting this history, it is to be observed, that at times and in an analogous manner to the operations of organic nature, there are frequently left over, of whole groups and families of words, only a few species, which lead an isolated existence as survivals and are extremely difficult to understand. We speak nowadays of *moral certainty* (*certitudo moralis*); but we have no idea of what the expression *moral* signifies in this connexion until we resort to the terminology of scholasticism where moral is opposed to physical and has approximately the significance of "inward," so that, to cite an example, *causa moralis* was contrasted with *causa physica*.

The inward history of terms is extremely varied, and it can give distinct expression to mighty as well as to unobtrusive movements of thought with greater faithfulness and delicacy than any other method. We shall select only a few examples from the unlimited wealth of this field. Often we have brought to our notice the migration of a term from one province to another. Thomas Hyde, who in his book *Historia religionis veterum Persarum* (1700) was the first to use the expression *dualist*, denoted by the word a religious doctrine which simultaneously with the principle of the good posited a principle of evil of like eternality; and also Bayle used the word

[1] Lessing justly remarks, "the thing to which the usage of speech continues to give a definite name, certainly also continues to retain something in common with that thing for which this name was invented."

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in this sense. But Christian Wolff applied the word to the relation of mind and body and so transplanted it into metaphysics. *A priori* and *a posteriori*, both late-mediæval terms, whose ultimate origin may be traced to Aristotle, first designated the opposition of deductive and of inductive procedure, but since the eighteenth century and particularly since Kant, have come to express the contrast between knowledge originating in pure thought and knowledge originating in experience. They have been transferred, accordingly, from methodology to epistemology. *Egoism* in the first half of the eighteenth century was the name of a theoretical doctrine which recognised the individual ego of the thinking person as the only real existent; in the second half of that century, the transition to its present meaning was effected.

In such transitions may often be found incorporated the broadest tendencies of contemporary thought. Towards the close of antiquity we see philosophical terms undergo a transformation from the theoretical into the practical and ethical. On the other hand, in the last few centuries the movement of thought has been from the objective to the subjective, from metaphysics to epistemology and psychology. Throughout the whole history of this period, terms for outward things (for example, *culture*, *organic*, *mechanical*) have been converted into terms for internal things. But this movement has an extremely variable tempo and exhibits the most diversified phases.

Furthermore, terms may exhibit extremely varied transformations of inward composition. By *monism*, Christian Wolff sought to describe that view of the world which regarded either the physical principle or the mental principle as the sole and ultimate substratum of reality. A word so artificial in its character as this, which embraced in the same class the extremest differences, could not of course establish itself. But the word existed and merely awaited employment in some other sense. This it found at the hands of the school of Hegel who were the first to employ it spiritualistically to designate a view of the world which conquered all self-contradictions and antitheses. The meaning which the word predominantly has at present in Germany most likely came from Haeckel and

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Schleicher of Jena. However, while Haeckel identifies monism with mechanicalism and materialism, the editor of the present journal, which bears the name of *The Monist*, again broadens the meaning of the term, defining monism as a unitary world-conception, its method being consistency of thought and its ideal a harmonious and systematic presentation of the various aspects of truth.

Such transformative processes may extend over thousands of years and reflect in miniature all the main phases of evolution. For example, this is the case with the word *idea*. Not only in this word are such enormous differences clearly distinguished from one another as occur in the ontological and æsthetical thought of Plato, the religious speculations of Philo and Plotinus, the psychological of Descartes and Locke, and the transcendental of Kant, but almost every independent thinker has found expression of his individuality in delicate shades of usage of this word.

In such transformations terms may depart very widely from their original significations, nay, form a direct antithesis thereto; and they may in their career follow diametrically opposite paths. *Form* signified in scholastic usage the essence which shaped things from within; subsequently, outward appearance. *Evolution* in the eighteenth century was the name of Leibnitz's theory of development, which conceived all growth of organic nature as the mere swelling or enlargement of diminutive preformations—the so-called encasement theory, against which C. F. Wolff directed his famous *Theoria generationis*. But now this designation is borne by the *modern* theory of development, which inclines to the view of Wolff and is diametrically opposed to that of Leibnitz. Also the complete inversion of meaning is known which the expressions *subjective* and *objective* have suffered, as compared with their scholastic usage. Until the end of the seventeenth century the word *subjective*, being the adjective derived from and referring to *subject* or *subjectum*, had the precise significance that the word *objective* now has, and *vice versa*. The revolution in the meaning of this word started in Germany, and for a long time it was felt by other nations as a strange innovation. The transformation would hardly have been possible

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had not the terms been transplanted into a different language and into a different intellectual environment.

So far we have regarded terms entirely as individual elements, but our subject acquires a far higher interest when we take up the study of the mutual relations of the individual elements and seek out the meaning of their union in larger organic groups. Here are to be met the most varied complications and interactions, now mutual reinforcement, now pronounced hostility, here quiet persistence, there rapid change—the whole a kaleidoscopic and frequently fascinating spectacle. Running throughout the whole there is a common effort traceable, a common seeking after the appropriate and adequate designation of the ideas controlling our thought; everywhere we find acting, so to speak, a teleological principle, a principle of selection of the fittest. But this effort and aspiration does not come from without as the result of reflective thought; it acts through and by way of the individual elements, and is their own intimate outcome. The elements must needs develop and do battle with one another, so as to show their potency. Looking at these individual events solely, we observe a predominantly molecular and mechanical action; pure and actual matters of fact are displayed; principles like heredity, struggle for existence, and adaptation to the environment play in this process at least a prominent part, if not exactly that which is observable in nature. The real motive factors cannot be clearly established until all is considered as a whole, despite the fact that we have their activity brought distinctly to our notice in the individual terms themselves.

Manifestly the existence of terms is subject to the conflicting influences of a tendency to persist and of a tendency to change, where *existence* means actual living employment in science as distinguished from mere historical occurrence. A term once in existence, now, is easily kept in existence by being handed down from generation to generation, or by simple heredity. A term offers to thought a convenient tool, an unfailing lever, and opens up extremely easy paths. It is given to us without labor on our part by the hand of tradition, and is communicated to us as a matter of course. Is there any wonder that we accept it calmly and continue

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to employ it as it was given into our possession? A term has here all the impregnable authority of an ultimate fact. It is forgotten that often it contains more than a mere designation, and may be the embodiment of an extremely problematic opinion. We find thus displayed here a faculty of permanence, a genuine "natural inertia." We never recognise its potency more distinctly than in the stupendous power of resistance which established distinctions possess; it would seem as if they could never be made to loose their hold on the mind. The four temperaments with their characteristic phraseology have been preserved to the present day through all the mutations of physiological and psychological theories; the old form was so puissant that the new ideas had to make use of them in order to gain acceptance themselves. The power of actuality augments by simple persistence; the term becomes more and more firmly established and more and more firmly interwoven with the rest of tradition. If this tendency to persist encounters no opposition, the terms will also gradually come to form among themselves an aggregate of increasing solidity and finally become consolidated into a system; but then, despite all the resultant advantages of formal elaboration, there is a constant danger of inward torpor and a cessation of intellectual progress, whereof we have an example in the later phases of scholasticism.

Where the intellectual life is vigorous and buoyant, there is no want of counteraction by transformative forces. Where terms are part of a living tongue, the incessant though scarcely perceptible changes in the meanings of words ensure them from becoming absolutely rigid. In an unusual degree are the conditions of existence surrounding terms altered by the transference of intellectual achievements to a new language. But the stability of terms is most powerfully and frequently shaken by stupendous catastrophes and revolutions in the realm of thought, or by the shifting of the main bent of philosophy. In all such movements frequently several candidates lay claim to the same place or standing. If no intellectual compromise can be effected by a division of the domain, one must give way before the other in the fierce struggle for existence that necessarily ensues. In this way in periods of fruitful

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creative activity the single systems come into hostile conflict. None can control the empire of thought unless it is successful in enforcing general acceptance for its terminology. But by the very act of achieving this victory, that is, by the very act of their passing into common speech, they lose a certain amount of their peculiar characteristics, although the loss is not total. Thus, much of the spirit of systems still abides in the terms imposed by them on the world, and their influence, although unobtrusive and recondite, is still generally noticeable and enables us to form a judgment of the measure of their success. Terms that are not accepted may persist within the school itself, but their life is severed from the general movement of thought, and their cultivation is entirely artificial.

A different kind of contest arises when the traditional phraseology of a language comes into conflict with the traditional phraseology of a foreign tongue. In a limited degree this conflict is enacted wherever one civilised nation is in contact with another. It comes to pass on a far grander scale where a large mass of intellectual achievement is transplanted totally to the soil of a new language. In such a conjuncture the continuity of tradition is broken. A sifting and winnowing of the material is imperative. Even the terms that are preserved must establish their right anew, and frequently undergo adaptive modification in respect of form. On the other hand, even after a term has asserted its initial fitness, still its position is not definitively assured; for the deeper the intellectual movement strikes root in the new soil, the more imperative is its demand for forms adapted to this new soil; new expressions are coined and act with all the fresh and vigorous potency of natural and original elements, whilst the old has all the advantages of assured position. Even when the new terms are actually advancing and on the general road to acceptance, still victory is not assured in all cases. A contest of the kind referred to was conducted by the Romans against the Greek terminology, and by the Germans against the Latin terminology of the schoolmen. The Germans had the advantage of a more opulent and flexible tongue, but the Romans presented a solider front, and better understood the method of consolidating the achievements of individuals into an organic

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whole. Where two terms laid claim to the same place, not infrequently both were preserved side by side, whereupon afterwards a differentiation of ideas ensued. Originally mere outward inducements to fix the meanings of different words as regards one another have in the end frequently led to an inward and profound subtilisation of thought. As often happens in the world, an advance was here also made from without to within, and accidental circumstances aided the advancement of reason.

The inward displacement of the intellectual situation by new systems of thought must be great according as the rupture of the new with the old is abrupt and its way of stamping itself on the thought of the times is vigorous. Particularly severe will the collision be at the points where the centre of the new system is situated; for here least of all can the thinker accommodate his mind to the strange forms. At this point, consequently, either a new formation must result or the old must become adapted by inward transformation to the new conditions of life. But though every system imparts from its centre a new undulation into the sea of terminology, yet the behavior of thinkers varies greatly in this regard. One class treat the form as something unessential, in fact have a positive dread of giving a determinate form to their systems, going so far as to regard such procedure as a restriction. Such was the manner of Fichte. Others, on the other hand, cannot rest until their ideas have found full and permanent incarnation. On this question men like Plato and Leibnitz have held liberal views; Aristotle and Kant have observed a more rigorous standard. For terminology the latter are the leading spirits.

All these processes vary in intensity and pursue different courses, according as they deal with technical terms proper—terms which describe a definite subject or a definite activity, that is, define some actual matter of fact—or as they deal with terms that involve a characterisation or judgment, as, for example all party names do. Since the latter appeal in a high degree to the emotions, they are consequently subject to far more vacillation. Powerful impulses from without are not needed for shifting the situation in the case of such terms; in fact, their own development trans-

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forms it of itself. These terms go through some such course of development as fashions; they annihilate themselves by a species of immanent dialectic. For a thing that springs up originally as having a special significance and as designed to mark off a definite movement from others, is, when its aim has been accomplished, appropriated by others. But the more the number of its claimants increases, the more the word comes into general circulation, the more it loses its discriminative efficacy, the more it is exhausted and worn out. Its bearers must look about them for some new expression whereby to distinguish themselves sharply and unmistakably from others. Thus its outward diffusion results in inward annihilation, and the repeated exhaustion and constant change of party names is rendered intelligible.

In glancing over the changes which the total body of terms undergoes in all these movements, a contrary direction of development is unmistakably obvious. On the one hand, there prevails a tendency for increasing minuteness of ramification and sharper differentiations, and on the other hand a desire for simplicity and for reducing systems to clear and stable fundamental lines. Where the foundations of a work persist unchanged and the construction of the edifice is quietly continued, we have always to expect increasing carefulness of elaboration and increasing exactness in the specification of the ideas of the system and consequently of its terminology. This process is displayed with special distinctness in later scholasticism. But it involves the danger, which runs hand in hand with increasing subtilisation, of losing touch with direct and living experience, and of degenerating into artificial routine. If the foundations are then attacked, there is eminent peril of the whole structure collapsing. Subsequently, and as the result thereof, the tendency arises to repudiate entirely all subtle definitions and to fix the meaning of only the most simple, the most incontestable and the most immediate notions.

This is what was done by the great thinkers of the seventeenth century, and by none more than by Spinoza. In all the crucial points of his system we find him constantly bent on exhibiting the identity of ideas which formerly were discriminated with great zeal

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and assiduity; again and again we meet in the works of this great monist the characteristic phrase, *unum et idem sunt*. On the new soil, of course, the need of discrimination subsequently again arises, and consequently the same danger may set in that it was first sought to escape. History thus offers the spectacle of successive simplification and differentiation: like Penelope it always seems to be unravelling what it has woven.

In reality, however, this stupendous movement is not without its results. At one time there remains a choice total of permanent gain; at another there is the hope that, just as cognition is directed to true problems by the experiences gained in strife and controversy, so also in terms there is constantly brought to expression more matter of fact. Since thought is always advancing into infinite stretches ahead of it, and the means of expression also must constantly change, consequently also terminology can arrive at no final goal but must continue in constant development. We must rest satisfied that this movement is not entirely without its fruits.

II.

The foregoing considerations concerning philosophical terminology might still be developed in many different directions and in far greater detail. Furthermore, they might be brought into relationship with the general problems of language and of the latter's relation to thought. This task, however, would carry us too far, and the little that has been said is perhaps sufficient to establish the significance and fruitfulness of this province of inquiry. A wide domain of research is thrown open here which affords abundant material for study and discovery, and in addition is eminently apt to give assistance in the solution of other scientific problems. The manner in which individual thinkers, nations, and epochs give expression to their thoughts, furnishes an important contribution to the portrayal and appreciation of their character. But, most strikingly of all, the individual is more precisely appreciated, more accurately interpreted, and more distinctly comprehended in his individuality when the peculiar traits of his language are fully grasped.

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We come to know in our study of terms individuals, epochs, and nations, as well in their isolated states as in their relations to one another. We recognise the influence which the work of the individual has exercised upon the collective social body. Relations which otherwise would have remained obscure rapidly lend themselves to comprehension from this point of view. Nay, even the collective spectacle of history receives by this procedure a peculiar form—in that it is made to appear less as a continuously flowing current than as a luxuriant mass of branches and foliage or as a complex and intricately woven texture. The individuality and distinctness of the results and creations are brought more visibly to the fore. By having our attention diverted from the results and fastened more particularly upon the means and conditions of the work, the elementary and individual forces involved are more apt to obtain recognition, with the result that the importance of an exact inquiry into the historical facts as distinguished from the speculative treatment of the same, is strongly emphasised, although without rendering the speculative treatment superfluous, nor in any manner dispensing with it.

But this increased importance of individuals and of individual achievements is far from resulting in segregation and waste. On the contrary, here more than elsewhere all things are mutually determined and mutually associated. Not only is the upshot of the individual's achievements parcel of the collective social body, but he himself is indissolubly linked with that body in the conditions and suppositions of his performances. In words and terms the labors of centuries flow in upon the individual; an intellectual environment receives him here with silent but powerful influences. The movement of terms exhibits history far more continuously and uninterruptedly than could possibly be observed from the struggle of ideas. Even opponents meet on this common ground and can profit by contact. Thus is demonstrated and strengthened here that treatment and view of history and sociology which forms a marked characteristic of our nineteenth century. At the same time the limitations of this view and of the influence of the collective social body are just at this point rendered manifest. Tradition is useful only

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when it does not suppress the native activity of the individual. Traditional terminology aids scientific work only when it is grasped by independent thought, carefully tested, and revivified. If some such opposing influence is wanting and individual power is not exerted on this subject, the heirloom of ages may be converted into a fateful burden, intellectual labor perforce will stagnate, grow formal and even erroneous. Thus history and society do not hold sway over the individual as an unavoidable destiny, but the interaction, or, as we might say, the struggle of individuals with the collective body, of the present with the past, is the fountain-head of all true life.

But inquiry into terminology is not only the condition of intimate and fruitful contact with history, it can also directly promote the work of philosophy itself. Concerning the dangers of obscure language, concerning the disadvantages of changing and ambiguous expressions, there can be no doubt. But it is far easier to complain of such conditions than to devise means for removing them. Yet unquestionably such a means, such a solid *point d'appui*, is offered by the illumination which historical research sheds on the character of terms. The constraint here exercised induces us to deal more seriously with terms and to insist upon precise significations. The historical pursuit of a term from the time of its origin to the present cannot help making it more transparent; things that lie hidden and often fused in our present stock of variant meanings, things therein that are merely the echoes of former phases of existence, are all detached and set off in single definiteness by this genetic mode of consideration. The conditions and suppositions of the present become clearer to us. By the injection of new life into the term the idea receives greater precision. Lastly, we also gain in our own work on understanding how the created has sprung from the creating.

The opinion is not infrequently advanced that all controversy in philosophy is simply a result of misunderstandings and that agreement in the matter of words would also bring about agreement in the matter of things. So thought most of the thinkers of the seventeenth century, including Descartes and Spinoza. But Kant

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repudiated the view with much vehemence. To him the work of philosophy appeared to involve too many antinomies of fact to warrant any hope of composing them by a mere clarification of language. Unquestionably, Kant is right on this point; but if this method is not able to establish complete peace in philosophy, it is certainly a powerful enemy of all unnecessary controversy. Inasmuch as a clarification of verbal expression lessens the number of purely verbal disputes, all the more time and strength can be expended upon real problems and genuine inconsistencies; and that is certainly much. It was a pretty *mot* of Kuno Fischer that true problems are true thoughts. When its energies are applied to true problems, philosophy will bear richer fruits, and we may cherish the hope of its promoting the advancement of the whole even by the very struggles and conflicts which it involves.

III.

A province of scientific inquiry which offers such a plenitude of material and bears on such important questions, and whose bent and character harmonises with such powerful intellectual movements of our time, should arouse much interest and also much activity. The more so as ever since the beginning of modern philosophy the import of scientific terms has been incessantly forced into notice, and principally by English inquirers, from Bacon and Locke down to Whewell and Mill. If the tendency to treat history exactly is added, we have all the conditions of a progressive development. In fact, much interest is taken and much labor is being expended in this direction, and the attention of thinkers has been sharpened for the questions involved, both in the portraiture of great inquirers and in the editing of their works. More notice is being paid to the subject of terminology, while there is a distinct increase in the number of monographs on important single terms. But with all its individual achievements the state of the province as a whole is far from satisfactory. There is a lack of concentration, of organisation, embracing and holding together the scattered results and guarding the laborers against a useless waste of effort; and the

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reason of this lack is solely that questions are treated incidentally and supplementarily, which can be brought into inward and outward connexion only by being independently elaborated and by being made an end in themselves.

It has been the fundamental idea of our inquiry that the term as a union of idea and word possesses a peculiar character and has shared peculiar fortunes. If this view be correct, then terminology must take a place apart and become an independent discipline within the domain of philosophy, and the branches of research bearing upon it must converge and be formed into an intimately connected whole. But this can never be accomplished from detached and isolated points of attack, but demands the protective oversight of some common organising head, such as can only be found in some learned body, academy, or university. Such a body should undertake the compilation of a large thesaurus of terms, on which, in view of the prodigious mass of materials and their vast ramifications, innumerable scholars should be set to work. An archive for terminology would have to prepare the way for and support this undertaking. Having thus obtained a secure foundation, not only would all individual labor be rendered easier and more productive, but an abridged philosophical dictionary could be compiled for the needs of educated people generally. Many are forced to dispense with such a work at great intellectual cost and sorrow, and besides such a dictionary would augment not a little the influence of philosophy on common life. A vast and difficult task, but one which bids fair to yield much fruit.

The organisation absolutely necessary to this end, I have for many years repeatedly recommended in Germany, and have also sought to create an interest for the project by special treatises.[1] Of assenting voices among individual colleagues there has been no lack,—latterly Dr. Schmidkunz of Munich has taken up the cause,—but nowhere has the organisation been set on foot, and so far as I

[1] *Geschichte der philosophischen Terminologie im Umriss*, 1879; *Parteien und Parteinamen in der Philosophie* (in *Beiträge zur Geschichte der neuern Philosophie*, 1886.)

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know there is nowhere hope of it. Here, therefore, is a chance and a task awaiting America, where there is no lack of scholarship, talent for organisation, nor of readiness to make sacrifices. American scientists have proved themselves by their work in other fields to be the peers of the scholars of the Old World; why, therefore, should they not undertake the leadership in this new branch which treats of the history and development of the language of philosophy?

RUDOLF EUCKEN.

JENA.

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ON THE ORIGIN AND IMPORT OF THE IDEA OF CAUSALITY.[1]

MORE than a hundred and fifty years have elapsed since David Hume, in his critical inquiries concerning the human understanding, subjected to exhaustive scrutiny the idea of causality. The impoverishment of this idea, the restriction of its meaning which Hume's analysis proclaimed, reposed on a peculiar view of the genesis of this notion. This latter study had since Locke been regarded as the safest method of establishing the epistemological value of ideas. The epistemological value of an idea is determined by the amount of reality entering the idea. Reality is synonymous with that which may be made the subject of direct experience, with that which is perceived, and not with that which is represented or thought,—in fine, with what Hume called *impression* as distinguished from *idea*. And every critical examination of ideas necessarily goes back in the end to the question: What definite experiences, what impressions lie at the bottom of them? Hume, as we know, subjected to the test of this logical reagent a large number of ideas, and with regard to all of them came to the same sceptical conclusion,—that in the popular as well as in the scientific usage these ideas had far more intellectual contents than could be warranted by their actual cognitive or experiential elements, and consequently that this surplus was more a product of imagination than of reason, more fancy than knowledge.

Of all the ideas which Hume investigated, that of causality is unquestionably the most important. It is the cardinal notion in

[1] Translated from Professor Jodl's manuscript by Thomas J. McCormack.

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the comprehension and arrangement of all the changes which we experience—a leading concept both in the physical and in the mental sciences. Our whole scientific world-view is determined by the meaning we give to it. Precisely at this point, moreover, has the influence of Hume's criticism been particularly lasting. Both science and philosophy have bowed to his arguments, and, so, have lapsed into a species of habitual scepticism for which in the nature of the case there was no real foundation. The irrefutability of Hume has grown into a virtual dogma, and it will doubtless repay the trouble, as it generally does in such cases, to submit this dogma to searching and exact analysis.

According to the notion of causality, as it was commonly accepted in the popular and scientific thought of Hume's time, a change occurring in nature was interpreted as having its origin in an antecedent change or motion connected therewith in time, as being effected by its antecedent, or as being *necessarily* conjoined with it. On the basis of his analysis now, Hume excludes from the contents of this idea all connexion among the things themselves, all objective connexion, as also the necessity of such connexion; he leaves nothing standing but a connexion of ideas and the *feeling* of a certain necessity in this connexion, that is, a subjective connexion. Causality, says Hume, implies no connexion of things, for this would require that some special perception should be given us of the bond which links two phenomena together. But nothing of this sort has ever been observed. The impressions on the basis of which we causally connect two phenomena never present anything more than regular succession. Nor does causality involve connexion by virtue of the contents of the conjoined ideas, somewhat as we are able to develop a system of geometrical properties from the ideas of the circle, radius, and tangent. There is no logical connexion involved. For no one can infer from the idea of a thing what its effects must be, or what it has been the effect of. Our causal judgments are dependent entirely on experience. But this furnishes us with nothing but regular succession, and this alone gives rise to the so-called necessity of causal connexion, which is merely a habit or propensity of our imagination to associate regularly succeeding ideas, to pass

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from the one to the other, to expect or to foretell from the one the other.

So much for the sceptical arguments of Hume. Of their extraordinary influence I have already spoken. The entire Kantian philosophy, wherever its influence reaches, is almost completely dominated by them. Neither Kant nor his followers ever ventured to assert in contravention of Hume that causality could imply a necessary connexion in the objective world. Their sole makeshift was the ennobling, I might say, of what was substituted for this objective connexion. They made out of a habit of the imagination, out of a law of association, a primitive and original function of the understanding—a category. But it is clear that this statement of the problem of knowledge is in no essential point an advance on Hume. For the word *knowledge* bears its right meaning only when what is so called produces in us a consciousness of objective relations. But universal subjectivity is not the same as objectivity. An order of things proceeding *solely* from innate functions of the mind would be a conceptual architectonic figment, possibly of great rigidity and regularity,—a system of necessary illusions of the race, but not knowledge. It is a matter of course that all knowledge is partly mediated by consciousness, is a joint action of the ego and the non-ego. Absolute knowledge—that is, such as would be at the same time the thing itself—does not exist. All knowledge is a blending, a unification of the ideal and the real.

But not only Kant and Kantians of all shades down to Fr. A. Lange and Fr. Zöllner have surrendered unconditionally to Hume. H. Lotze also advances substantially the same ideas and teaches the doctrine of the unessential character of all causal relations for thought and the impossibility of discovering a bond between cause and effect. And when he attempts to overcome this isolation of the single elements of the world by assuming that they are all members of a single being and unitary substance, surely this is equivalent to seeking in remote metaphysical cloudlands truths which lie unnoticed at our feet. For inasmuch as all things in the world are far from being causally connected with all other things but in all cases definite effects only are dependent on definite

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causes, therefore the substantial unity of the world cannot enlighten us regarding the validity of our causal judgments and their epistemological value—but in reality the connexion sought is to be found in more proximate regions, namely, in the order and happenings of the actual world.

For certainly—to set the matter at once aright—the truth does not lie in the direction indicated by Kant, nor by Kantianism and the idealistic metaphysics. This line of thought, far from leading away from scepticism, actually plunges thinkers deeper and deeper into it, finally landing them by a perfectly intelligible reversion in mysticism. The truth does reside in empiricism, but it requires for its discovery a more searching examination of experience. The empiricism of Hume is not too much empirical but too little empirical. His description of the facts of experience is not exact enough. He jumps too frequently to constructions. I shall now set about demonstrating my assertions in detail.

Hume had asked in what fact of immediate experience, in what impression is the connexion between two phenomena given which we have in mind when we say that they are causally united. He had answered, there is no such impression. The phenomena, or the ideas representing them, are absolutely distinct; there is no bridge leading from the one to the other, except that of custom. The causal law is nothing but the law of our psychological mechanism.

Is this a perfectly exact and apposite description of the facts? Whoever replies in the affirmative is irrevocably a captive of Hume's reasoning and can escape his conclusions in appearance only, or by extremely artificial devices. It is my belief, however, that this question must be answered in the negative. Misled by certain prejudices of the philosophy of his time, Hume did not rightly envisage the facts which led to his theory. What were those prejudices? Locke in his examination of the human understanding proceeded from an assumption which also thoroughly dominates Hume's inquiry: that the original, *actual* path of development of consciousness was the same as that of psychological analysis, only contrary in direction. Psychological analysis dissects the contents

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of consciousness, separates the individual phenomena from one another, and endeavors to apprehend their simplest and most primitive forms of appearance. No one will deny the value of such inquiries, nor of the profound vistas which they afford into the hidden mechanism of consciousness. But psychological and epistemological methods are not identical, no more than are anatomical and embryological.

The blending of these two problems is characteristic of the entire period of criticism to which Hume belongs. It was thought that the epistemological problem could be solved by undertaking a synthetic construction of the contents of consciousness from the elementary facts which psychological analysis had revealed. It was supposed that what was simple and ultimate in a psychological regard was also adequate to explain our perceptual and intellectual complexes. This is tantamount to asserting that a knowledge of the chemical constitution of a body is able to furnish us with a direct sensuous picture of that body. It would be the same as if an anatomist after singly studying and depicting the myriad parts of an organism should form a new synthesis of them and imagine he had apprehended in so doing the secret of life. Consciousness is an organism like the living body; not a mosaic that can be taken apart and then rebuilt from its elements on the same plan. In fact, we must go a step further and say, the simple, the elementary is never a datum, but is an abstraction—not a thing experienced but a thing thought. In actual experience, apart from all psychological reflexion, the elementary, or what Locke calls "simple ideas," never occurs. In point of fact, we have experience only of complexes, complexes of sensations of varying qualities and modalities, combinations of motions with sensations, combinations of sensation and motion with feelings and volitions—complexes in which some of the individual constituents suffer change and modification whilst others remain unmodified. These complexes are the original data of consciousness. We renounce all possibility of insight into the real foundations and epistemological value of our ideas if we regard these complexes or syntheses as the subsequent products of conscious activity whose origin from isolated elements is in need of

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some additional explanatory principle. This is a complete inversion of the situation and involves us in struggles with difficulties of which we ourselves are the creators.

That unification, that complexus which makes of a group of sensations a "thing"; that complexus which presents a causal relation—that is the simple original element for the non-reflecting consciousness. The separation of its constituent parts, the analysis of the complex into its elements is a work of thought, of abstraction. There is never in consciousness absolutely unformed matter, a raw material of sensation on which the mind imposes form from its own exclusive stores—for the simple reason that in the world which our sensations reflect no such thing exists. The ideas of matter and form are here as everywhere altogether relative. Thus also pure formal thought cannot be in consciousness entirely before experience, making possible experience itself; but consciousness by the exercise of reflective thought picks out from the unanalysed contents of experience what the early critical philosophy called ideas of form or *Stammbegriffe*. If these were not immediately contained in original data of experience, we could never arrive at knowledge by means of them, but at best could perform constructions. Hence the question regarding the bond which knits together our perceptual complexes, or regarding the source from which the form of our sensations springs, can only be understood from the point of view of a matured reflexion to which for some reason or other the immediate data of experience have been made the subject of doubt. The simple man, the man of early stages of civilisation, the adolescent man, would not grasp the question at all—it is extremely difficult even to make him understand what it means. For the perceptions by which formal conceptions, say the idea of cause and effect, are awakened in him are not distinct, detached, and isolated perceptions, but a complex of perceptions of which one always stands to the others in a relation of contiguity, of which one passes into the other or is transformed into it, and which for him, therefore, are not separated but belong together and form a whole.

The contents of the notion of causality in the natural conscious-

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ness, therefore, is something more than and different from what it is in Hume's explanation. Even the non-scientific consciousness discriminates quite readily between the inward compulsion of an association and the outward necessity of a relation of causality. Not everything that constitutes by reason of regular succession an association, a propensity to pass from one thing to another, is conceived as causally connected—a distinct proof that in Hume's explanation all the contents of the idea have not attained their full expression.

This explanation exhibits a surprising similarity to the exposition which a movement in modern psychology, resting on allied fundamental views and which is often also termed empiricism, has given of the origin of the perception of space. This psychological empiricism has attempted the feat of showing how spatial character can be imparted by sensations of movement to contents of sensation to which originally the spatial quality was wanting. But the muscular sensations of the moving eyeball could never engender the optical intuition of space unless the sight-sensations had from the beginning been definitely arranged and fixed in visual space—they can only give greater distinctness to this originally incomplete arrangement.

No more can habitual connexions of two objects or ideas through a relation of sequence produce the true notion of causality, as the general consciousness of mankind employs it, although as we shall see, in this notion regularity of temporal succession also forms a factor and that no inconsiderable one.

But the deepest root of the notion of causality has not yet been disclosed in the preceding considerations. So far, we have only marked out in the path trodden by Hume the place where this acute thinker strayed from the right trail. The natural complexus of sensations which we were constrained to substitute for simple ideas as the real epistemological element, is not of itself sufficient for our purposes. Natural complexes of perception also lie at the foundation of the notion of thing, of the notion of substance, of the notion of space and time, of the notion of the ego and the non-ego. The question is what additional elements must be contained in such

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a complex in order to engender the notion of causality, or, what is the same thing, to make the members conjoined in such a complex appear as cause and effect.

Our purpose may be made plainer if we reflect that man is not only a representing but also a willing being; not only passive but also active; that not only do the images of the world pass before his mental vision, but that he has also the consciousness of action, of interference, of independent creation, and of being a cause himself. In the notion of causality, as was said above, every one has in mind the notion of a change which has been effected or occasioned by an antecedent. Can it be, that the type of this idea is really so inapprehensible? Are we to think that all the changes in the objective world which emanate from the ego, as when we change the position of a thing, take something into our hand or throw it away, when we put food into our mouths, make something, or divide something, or put something together, when we make something sound or vibrate—that all these processes or changes in the objective world are not to be conceived as having been produced by the ego? Volition, motion, the feeling of force, change in the world of objects—which for the very reason that we are successively aware of them as conforming to the manner and direction of our motion and with the measure of our power, appear as an equivalent or as a transformation of our motion—here we have a complexus of perceptions, no member of which is isolated and distinct from the rest, but which are involved in continuous and constant transitions, exhibit partly spatial, partly temporal contiguity, which form an indiscerptible totality, and from which the individual factors can be disengaged only by extremely mature reflexion. But reflexion of this kind is foreign to the ingenuous man. Since not a shade of doubt prevails in his mind concerning the connexion of his movements with his power and will, and again concerning the connexion of a movement willed by him with the results accomplished before his eyes: consequently this event becomes for him in its entirety the type and exemplar of causality.

Effect, "effected," is that which one endowed with power makes, creates, or shapes by means of this his power. This is the real

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root of the notion of causality as man fashioned it previously to all science and theory of knowledge, through intimate contact with his needs and his abilities, and consequently with his instinct of self-preservation. Let us picture to ourselves but for a moment the importance for man of the changes produced in the outward world through his initiative power,—the slaying of enemies, of beasts of prey, the felling of trees, the manufacture of weapons, tools, utensils, the production of fire, etc.,—and we shall no longer be tempted to doubt that the strong impression which this relation must have made on consciousness was the first and most original source whence the notion of producing effects, of causal connexion sprang.

It has been held that we must dig deeper in order to lay bare the true root of the notion of causality, and that for this purpose reference must be had to certain phenomena of inward experience—the following of a conclusion from its premises, the desiring of means for the sake of the end that can be reached by the means. Here and only here, is necessary connexion, inward conjunction, effectedness, absolutely evident. We are concerned here, according to the unequivocal declarations of inward experience, not with habitual succession, but with genuine causation. Now unquestionably it must be granted that the connexion of these psychical processes answers perfectly to the notion of causality as that takes shape after a rigorous epistemological and critical elaboration. They are perfect types of psychical causation. But whatever services they may render in a logical or epistemological examination of the idea of causality, they are totally unqualified to supply the genetic foundations of this idea.

All development of consciousness proceeds from without to within. Man, in his earlier stages totally naïve and absolutely abandoned to the contemplation of objective things, learns only very gradually the art of scrutinising inward processes. Things interest him, not the consciousness of things; the way things hang together, and not the way consciousness acts. The discovery of mind in his inner life must be relegated without exception to a subsequent stage. It is putting the cart before the horse to make the connexion of purely psychical phenomena the prototype of causal-

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ity, the key to the changes of the outer world and the key to the understanding of what is effected by our will, by our power. Man is wont to take little notice of the formal character of these psychical processes, for the reason that he is concerned only with the result and its practical utility. The thought which flows from given assumptions, the willing of the means for the sake of the end, exist, by the sheer power of the psychical mechanism, merely and always when the appropriate conditions are given; but the mediating process itself is never made the object of search. Remotest of all, however, from the unspeculative mind is the idea of comparing these psychical mediations with the momentous changes which we produce in the outer world. So remote, in fact, that not even Hume, although he regarded many causal relations between psychical processes as something self-evident, e. g., the influence on ideas of the corresponding impressions, the production of belief and of passions by prospective events,—that even he never hit upon the possibility that the typical form for the connexion of events in outward reality inhered in the above adduced connexions between psychical processes, although he unquestionably recognised these as real.

Thus, the behavior of one of the acutest of analytical thinkers, Hume, proves how artificial and far-fetched is the attempt made by some modern psychologists to derive the notion of causality from purely psychical processes. Conversely, the history of the development of human thought proves, that the genesis here given of the notion is not a mere logical creation. Mythological thought—the first form in which man sought to rationalise the surrounding world of phenomena—shows that the experience of personal creation, personal activity, is the prototype of causality; that those transformations in the world which man himself does not produce, are first rendered intelligible upon his assuming the presence of acting Beings within them. The circumstance is also to be marked that these beings—the gods and demigods of all ranks and degrees—have never been perceived; and that consequently the human imagination had to execute here a difficult construction, had to perform a genuine act of creation in order to arrive at these mental fictions with which the intellectual history of all peoples, the crud-

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est as well as the most gifted, teems. This circumstance itself proves that the root of the notion of causality cannot reside in the alleged psychical connexions. For, if the natural model of the notion of causality were really contained in these experiences of inward perception,—can it be imagined that human reason, whilst possessing such an implement for constructing and interpreting the connexions of natural changes, could have lighted at all on the expedient of personification? Obviously, there is but one reason why the mythological habit of thought arose and established itself, and that is because no other connexion between results effected and the agent effecting them is primitively intelligible, except that where the effecting agent appears as the will and power of a person. Is the idea of God aught else in the minds of most people than the largest and hugest product of this naïve instinct of causality, which never rests satisfied until it is thrown back upon personal action and creation?

And as a further proof that we are on the right track here, attention may be drawn to the fact that even where the idea of personal action has receded into the background, there is still a fair portion preserved of this ancient, I might almost say paleontological, notion of causality,—a portion the mere announcement of whose name is sufficient to bring home to every one its tremendous significance for human thought and its connexion with the idea of personal activity. I refer to the notion of force. No one will deny that we have derived this notion from self-perception,—whether from the force which we ourselves as willing persons exert, in order to do or accomplish something, or to produce certain changes; or from the impressions which we receive when outside things act on us. Whether active or passive, we are conscious of forces—now of our own force, now of outside force. And on the basis of this immediate experience we interpret as activity and passivity all those processes in the surrounding world in which we personally are not concerned in either of these forms. It is plain that force, too, is nothing but a weakened mythological personification. It is plain that a phenomenon is no more explained on tracing it back to a force than if we had traced it back to a deity. The ideas

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which accompany the thinking of the notion force are at best but an abridged expression of the facts themselves, of definite quantities of motion at definite points of the physical world. But the enormous diffusion and use of this notion in the thought and language of mankind, which even the terminology of science has not been able to avoid, affords a proof of how difficult it is for us to conceive of action and change in any other way than under the guise of activity and passivity, of a force that is exerted or of a force that is sustained. But this is the formula which in our immediate perception connects the changes of the outward world.

Here, too, it would be quite unintelligible how humanity had reached this mythology of the notion of force, which forms a well-rounded counterpart to the mythology of the gods, if the explanation of an otherwise unintelligible regular connexion between two phenomena had not appeared clear to it in these experiences, and if the psychological root of the notion of causality did not reside here, especially as regards the aspect of necessary connexion. For naïve thought, certainly, cherishes no doubt that if something is traced back to a definite force or exhibition of force on the part of something else, then that result necessarily follows—no more than it would for a moment cherish a doubt as to the necessity of the effects which are produced by its own displays of force.

Of course the phenomena which are to be explained by the notion of force must have a sort of resemblance to the changes which we ourselves produce; since otherwise the latter could not be used for their explanation. That is to say, they must succeed one another with the same regularity that certain modifications in the world follow upon the setting into activity of our representative or volitional powers, or upon our bodily movements, and we must be in a position to get some sort of direct view of the transformations, of the passing of one phenomenon into another, by the addition of some second thing. Where this for some reason or other is impossible, the naïve human being, the moment some modification appears to him of sufficient importance to be made the object of thought, again has recourse to mythology, and the activity of mysterious, invisible, personal beings is once more employed as a

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means of explanation, revealing the true and primitive root of causality.

We revert here to the factor of regular succession. By itself it is far from sufficient for engendering the notion of causality, yet it is proportionately indispensable in accounting for the rise of the same. Every regular succession produces an association of ideas, and the latter gives rise to an inclination to pass from the one idea to the other, or, when the one is given, to add the other in thought. But connexion by causality is a special case of the general form of connexion of ideas by succession. What it needs is a direct intuitive view of the transformation, and of the mode of emanation of things from one another, a direct and actual perception of the propagation of one state or property into something different. In a word: in and with the succession is given coincidentally the impression of coexistence and of contiguity, and this by virtue of the above-explained analogy with the results of our own action furnishes the foundation of our idea of things as being caused by, or due to, one another in addition to the fact of their following upon one another.

Now it is a frequent saying—Hume said it and countless others have said it after him—that in no case can we have a perception of this. This sceptical assertion, however, transfers doubts of a matured scientific frame of mind to the original construction of the idea. The common man would be quite astonished if we said to him he had no knowledge of the connexion, of the transformation which exists between fire and the production of heat, glowing, and burning, or which exists between nourishment and a certain degree of strength of body, between hunger and weakness, between rain and the prospering of plants, between generation and birth, between a blow, a wound, and death. We have only to reflect on what different demands exist for evidence or intuitive knowledge according to the degree of intellectual development. Things that appear quite natural and palpable to a simple mind offer the most perplexing riddles to developed thought. Man's appreciation of the continuity of a given connexion of things has many gradations from the most superficial and crudest to the microscopically fine and mathematically exact. That fire is the cause of the burning of ob-

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jects with which it is brought in contact, that it "consumes" them as a man does a meal, was perhaps never seriously doubted by any one that was not a philosopher, nor ever held by any one for a habitual connexion of two impressions which have objectively nothing to do with each other. But connexion is not in all stages the same, nor is vivid and palpable intuition always the same. For primitive man the fire-myth was vivid and palpable; as was also for the beginning of scientific thought the theory of phlogiston—a substance supposed to be contained in certain bodies rendering them inflammable and which could be consumed by fire. For the way of looking at things which then obtained, this conception was vivid enough and remained so until new observations destroyed its palpable character and showed that burning was not a consuming of matter but an absorption and different distribution of matter, and until scientists finally got to understand the various possible re-arrangements of matter and the relation of generated heat thereto. Starting from this first fundamental insight into the transformative relations of natural processes, a succession of other thoughts subsequently arose which began to remodel entirely the relation of cause and effect as it had been hitherto understood. It was disclosed, that a cause really produces nothing, makes nothing, engenders nothing, but only gives rise to re-arrangement or transformation; that between two processes which subsist in the relation of cause and effect an invariable relation of equivalence obtains which is constantly under exact control; that in all so-called becoming there is actually nothing produced but simply something transformed or re-arranged, and likewise that in all apparent disappearance nothing really disappears but a definite form, a definite disposition and arrangement of the elements of reality.

From these ideas the modern scientific notion of causality has sprung. The doubts of Hume do not apply to this notion. Hume required of the notion of causality, on the ground of its involving the element of necessity, that it should exhibit in the *single* impressions the force which bound together cause and effect. To-day we can say that this is a complete miscomprehension. Whence could this isolated force of connexion be derived which is supposed

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to operate like a *Deus ex machina* between two things which by themselves have nothing to do with each other? The "cause" is force and the "effect" is force; and what is styled the causal relation is the fact that two forces are able when in contact to become transformed. This is not accomplished by means of a special force, but it is nothing else than the fact of transformation itself as related to the joint action of two forces. And this also offers us a simple explanation of why in some cases a single observation is sufficient to ascertain the existence of a causal relation between two phenomena—*videlicet*, in cases where the transformation of one phenomenon into another and the relation of equivalence between two forms of force can be rendered in some way evident and palpable; whilst in other cases hundreds of observations and the utmost regularity of succession are inadequate to this end, for the reason that it is impossible to establish that palpableness of transformation which can alone justify the employment of the notion of causality.

Scientific cognition when it asks for the causes of things is in quest of nothing but this evident and palpable connexion in which the properties of two things are mutually transformed when brought into contact. The simpler classes of these connexions are to-day quite clear to us, and the effort of science is now none other than to reduce also the most highly complicated of these connexions, such as the phenomena of life and of organic modification, to simple and immediately evident transformations. Even here the naïve conception of causality which reigned in olden times and which was characterised by the two concepts of creation and vital force or *nisus formativus*, has already begun to give way to a growing comprehension of the true connexions of this field. The history of the evolution of the plant and animal kingdoms enables us to understand the present world of organisms as the result of a long succession of transformations of organic forms throughout countless generations. For the mysterious and uncomprehended causality of creational acts has been substituted a knowledge of the chain of modifications and persistent states which have made of the developing organic world what it is—a knowledge which even now, as the outcome of an infinite aggregation of facts furnished by zoölogy, botany, and

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paleontology, has acquired almost irresistible distinctness and cogency.

Evolution explains the existence, the adaptiveness, and the astonishing functions of existing organisms by the summation of minute new-formations, which fundamental living forms have assumed through constant contact with their physical environment, and also renders intelligible a large number of these transformations by pointing to the particular circumstances which occasioned them. Physiology has arrived at the explanation of the large by the small on the same road through its discovery of the cell, or the organic element proper, which leads a life of its own wherein all the vital functions can be studied in miniature. We know that the individual animal, which we are accustomed to regard as a unit, is yet at bottom a multiplicity and constitutes a cellular colony, and that the functions of the single organs like those of the animal entire, are produced by the summation of the activities of countless cells. The old physiology sought to explain the actions of organisms, the charracter of whose transformations were as yet not understood, by the crude notion of vital force, precisely as the Ptolemaic astronomy assumed a special *spiritus rector* for each planet—all unmistakable indications of the true origin of the idea of causality. To-day the notion of vital force, as an empty mythological phantom, has in this department also been displaced by the notion of transformation. It is becoming more and more forcibly evident in matters of detail that the organism is nothing but an extremely complicated piece of machinery which under favorable conditions regulates itself. By its specially developed power of storing up potential energy in large quantities and of transforming the same again on slight excitations into kinetic energy, it awakens the false impression that it produces force from itself without the transformation of other force. But on closer examination it is found that the transformative process can be followed step for step; for in the organism, too, that invariable relation of equivalence between the different forms of force holds good which forms in a scientific sense the type of causality.

The employment of the notion of causality in human thought

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shows, therefore, a progressive development. Starting from the analogy of natural growth and annihilation with human action and creation, it appears everywhere founded on the existence of a definite connexion between two phenomena or changes which in some manner has been rendered palpably evident. The apprehension of this connexion, however, runs through all stages from the purely empirical to the rational, and from the inductive to the deductive. The contrast between mathematics and the sciences of fact which Hume pointed to, is not an absolute but a relative and graduated contrast. If it were absolute it would be unintelligible how we can make use of mathematics as a help in the study of physical things, but as this is instinctively done and with great profit to knowledge, profound analogies must exist between mathematical forms and the elements of reality, or, in other words, reality must involve rationality. On the other hand, the history of science teaches that matters of fact are always and everywhere the prime necessity,—and that even in mathematics. All elementary propositions of mathematics were first discovered as facts, that is, empirically observed, before they were deduced from axioms or were shown to be necessary. The same thing has happened with mechanics. Mechanics was originally a purely empirical science; to-day it has entered the realm of mathematics as a pure science. From the notions of force, gravitation, *vis viva*, mass, point of application, direction and velocity of motion, modern mechanics has developed a complexus of necessary truths concerning all possible forms of motion, and by means of the same physics has been rationalised throughout its whole extent,—that is, our physical knowledge, the connexions of physical phenomena, which originally possessed only a necessity of fact and were entirely empirical in character, have been converted into a body of knowledge which is linked together by the inward necessity of rational evidence and logical transparency. Chemistry pursued the same course. The bare empiricism of the old atomic theory which had been built up upon quantitative analysis and on ratios of weight and mixtures, is also beginning to give way before a deductive mode of treatment which attempts to deduce what were formerly only facts conjoined by empirical necessity, from funda

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mental assumptions involving spatial and mechanical data—from varying densities, heterogeneous occupation of space and irregular concentration of masses. And how long will it be before the biochemistry of the cell likewise will explain the present empirical fact of growth and modification of forms in all its inward necessity, from the constitution and *modus operandi* of the materials imbedded in the fundamental forms of organised matter?

The immanent necessity of logical evidence is for the modern mode of view in no respect something that is restricted to geometry, as Hume contended. It is simply most easily reached there, and consequently was earliest reached there. But we cannot make a thing that is the fruit of ages, viz., the notion of the necessity of causality in the above-discussed sense, the starting-point of the developmental process. We do have a development, but it is in the contrary direction,—the necessity which was originally only a necessity of fact is constantly raised in provinces of increasing extent to exclusively inward necessity. The problems of knowledge are solved when all provinces of action and of becoming are apprehended in their inward necessity.

FR. JODL.

PRAGUE.

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SCIENCE AND FAITH.[1]

II. INTRODUCTION TO MAN AS A MEMBER OF SOCIETY.

MAN, as scattered over the surface of the globe in clans, tribes, and peoples, forms the subject of ethnical anthropology or ethnology, just as man viewed as an animal forms the subject of anthropology proper or zoölogical anthropology. United politically under one flag these groups take the name of nations or nationalities. Viewed as to their modes of thinking and their methods of satisfying their wants they bear the name of civilisations. Considered in the relations which individuals bear to the group as a totality they bear the designation of societies. Sociology is the science which treats of societies. There is an animal sociology and a human sociology.

Conformably to the principle laid down in our preceding article,[2] that man is merely one of the exalted, or rather the most exalted, of the forms of animal life, and that the laws which regulate his existence, the phenomena which he exhibits, and the organs which constitute his being are, *in form and degree approximately*, but the application, repetition, and development of those which we meet with in the different stages of animal evolution, we shall commence with animal sociology. This part, accordingly, will form a transition to a third and last in which we shall treat man as a member of society. It will enable us to dwell at length on certain points

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[1] Translated from Dr. Topinard's MS. by Thomas J. McCormack.

[2] *The Monist*, Vol. VI., No. 1, October, 1895, p. 28.

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which we were obliged to curtail in the preceding article. We shall divide it into three chapters: (1) preliminary biological data; (2) the animal family; (3) animal societies.[1]

I. PRELIMINARY BIOLOGICAL DATA.

Life reduced to its simplest expression is the resultant of an *ensemble* of properties or operations of a peculiar species of substance called protoplasm, which impregnates all the parts of organisms and which we meet with in the isolated state only in moners. The four first properties which must be signalised are: (1) the *oxidation* of protoplasm, which is the source of its energy or stock of vital power; (2) *excitability* or *reflexibility*, which gives rise to its actions and is the intermittent cause of its loss of energy; (3) *nutrition*, which maintains the integrity of the protoplasm and is the cause of its increase; (4) *reproduction*, which supervenes when the augmentation has reached a certain limit. The result, as regards the protoplasm, may be summed up in two words: *life* as an individual during a certain period of time, and indefinite *perpetuation* in forms similar to itself. M. Delâge adds a third characterisation: the performance of *work*. These four properties, viewed alone, are physico-chemical in character. If a particle of matter, for example, comes within reach of a moner, an excitation takes place. If the particle is nutrient in character, the pseudopods of the moner will be extended, its cilia will be set in motion, and the nutrient particle will be engulfed. There is nothing mystical in this performance. A property merely is put into play—a reaction succeeding an excitation. At most we might say that the centrosome acted as the centre of attraction.

But reduced to their ultimate properties protoplasmic substances are simply inert bodies—admirably constructed machines operating in an analogous manner but without coal or actual materials to work upon. Their impulse and direction are furnished by outward stimuli. They are constrained to respond to the commands

[1] The first two of these chapters constitute the article in the present *Monist*. The third will appear in October, and the concluding *part* in 1897.

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imposed upon them, to put themselves in harmony with stimuli offered, in a word, to obey the exactions of their environment agreeably to the law of necessity, and on pain of death to accommodate themselves to the conditions of existence in which their lot is cast. Hence results a fifth property of protoplasm—that of *adaptation.* Three factors unite in insuring the perfect action of this property. (1) The plasticity of protoplasm, the result of the joint action of its reflexibility and nutrition; (2) its slight variations, with the consequent chance of modification; and (3) its capacity for transmitting new peculiarities. A word as to the first two of these. Simple and regular as the vital acts of protoplasm *per se* may be, they involve nevertheless more or less perceptible differences. Nutrition has its irregularities. The nutrient particles are not always seized and ingested at equal intervals of time nor always on the same side. The elaborated products are not always disposed with perfect uniformity from the circumference to the centre. *Variability* thus appears a primitive property. As to transmission, or *heredity*, it is involved in the fact of the reproduction of individuals like the parent protoplasm, as it exists at the moment. Thus we have another primitive property.

Nor is this all. From the union of all these properties, now numbering seven, but more particularly from the growth of the protoplasm, from its repeated reproduction or multiplication, and from its adaptation, results not the last, but the most fecund and the most general, of the primitive properties of protoplasm—its power of indefinite development, that is evolution.

Evolution! Without which living beings on our planet would never perhaps have emerged from the unicellular state, and which has caused the growth from the protists, of the vegetable and animal kingdoms, and of the vertebrates and man; titanic power always in action, always alert, profiting by the least circumstance, yet whimsical, capricious, seemingly groping and without set purpose,[1] em-

[1] The sole objection to this manner of conceiving evolution is that which I have already set forth in my *Elements of General Anthropology*. Certain organs, or arrangements of organs, certain functions are alike, or are developed in the same direction, in different branches of the animal tree, although the common trunk from

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ploying the most insignificant means and neglecting at times the most direct, pursuing different lines in its advance, curved lines, straight lines, crooked lines, parallels, divergents, yet frequently arriving at the same result, limited only by absolute impossibility for the time being, having but one guide, that which is good and directly useful to the individual, and but one sanction, success! Was not that what the divine author of Genesis strove to express when recounting how the heavens and the earth and the plants and the animals had been created, he stopped at each stage, and before continuing said: "And God saw that it was good."

The first results of evolution affect the interior of the protoplasm. Granulations, a nucleus in the vicinity of the centrosome, one or several vacuoles, perhaps filaments, make their appearance there. The moner has become an amœba, which is classified as a protozoön or a protophyte, according as it leans towards the animal or towards the vegetable kingdom. Some years ago a considerable group of homogeneous protoplasmic bodies without nuclei were supposed to exist; but the increasing power of microscopes has steadily reduced the number of these, and we are now constrained to conclude that few primitive protoplasmic bodies have come down to us. The following effects of evolution relate to the exterior: the pseudopods, the cilia, the vibratile filaments, the various irradiations, the more or less viscid envelopes, and even the calcareous or silicious teguments, which other divisions of the kingdom of protists present.

But the decisive stage in this distant epoch of the history of the animal kingdom is that which turns to account a final and hitherto latent property of the protoplasm, its power of blending or aggregation. This occasionally occurs in the protists. Protoplasmic bodies, with or without nuclei, born by the ordinary method of scission, adhere by their pseudopods to the bodies which have engen-

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which they have diverged presents no trace nor prophetic germ of them. To this I reply that these organs or functions being good and useful, it is natural that evolution should have led up to them several times by different paths. It is thus that prehistoric men, not in communication with one another and of different races, have independently invented flint-edged instruments or erected menhirs.

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dered them, or detach themselves therefrom, to form afterwards aggregated masses. Others having been left at liberty for a time, encounter one of these aggregates and join it. Thus appears at the beginning of our research this grand property of association whose fortunes and development we have now to follow. By virtue of it the metazoa succeed the protozoa; multicellular, unicellular beings. By it, all the numerous animals that inhabit our planet have been built up from the simplest to the most complicated, progressively to the vertebrates and man. Association, and adaptation by differentiation within the associated groups, are undeniably the two most potent factors of evolution.

Without inquiring into the relation which the species of association now under discussion, which is at once morphological and physiological, bears to that which we encounter under the specific name of *societies*, we will continue our investigations and cast a glance at the phenomena which the first kind offers.

The first aggregates, the so-called animal colonies of naturalists, were undifferentiated. All the cells were alike and constituted so many distinct individualities arranged in simple juxtaposition. Upon their first entrance into the kingdom of the metazoa, where henceforward they bear the name of plastids or anatomical elements, these cells were placed in conditions of life, which varied by reason of their different situations within the aggregate, and each cell was constrained to adapt itself to this situation. The first differentiation of their mass and the one which was most urgent, was effected at their centre, where a digestive cavity arose; the next was effected in the walls of this cavity which were doubled, the external layer being in contact with the circumambient medium, and the internal layer with the water which penetrated the cavity, both acquiring the special character which their functions demanded. Olynthus, a primitive sponge, is an example. The second adaptation is in the various forms which this primitive plan is led to assume according to the circumstances of its condition, becoming elongated or ramified as it is in polyps, or taking some other form. One of the extremities, that which is in contact with the ground, becomes attached to the ground; the other, the free extremity of the cavity,

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or digestive tube, provides itself with tentacles and becomes the mouth. The primitive cells, conjoined in groups, have thus given rise to distinct sorts of individuals which have been denominated according to their functions, digestive, prehensile, fixative, etc. Quatrefages has counted as many as seven kinds, not including the cells of junction or indifferent cells, which in some polyps are formed in sheets.

So far we have had nothing but the application of the grand law of necessity: adaptations to the conditions of the environment or death. Every plastid or group of plastids is subject to the exigencies which its situation brings with it. Morphological differentiation, that which is most favorable to the tasks imposed, is spontaneously effected. Every group is individualised in the functions which are allotted to it. Each has lost in a corresponding degree its ability to discharge other functions, and has been supplanted in their performance by its neighbors which it in turn has supplanted in theirs. Some of the cells of the community have obscure parts to fill. The parts of others are leading, and necessarily the latter take the supremacy. The inequality between the members of the colony is striking, but it is in the interest of the common weal. Solidarity is the result,—a solidarity which cannot help augmenting at the expense of all the individuals, but especially of the less useful, and which tends to culminate in the general unity of the whole. When this point is reached, our adapted and solidarised[1] colony forms throughout all its parts a single organism only,—an individual which has taken the place of all the old, minor individuals which are now fused and lost in its midst. This is the *meride* of Prof. Edmond Perrier.

The animals comprised under the designation merides are all metazoans, more or less low in the scale. Their young migrate and become fixed elsewhere, or live at liberty, or adhere together, thus laying the foundation of a new species of colony of the secon-

[1]At the suggestion of M. Topinard we use throughout this article the words *solidarise*, *solidarisation*, etc.; no existing English words have the exact meaning of the French equivalents of these neologisms, which have their justification and their analogue in *solidarity*.—*Tr.*

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dary degree, the members of which pass, or at least may pass, through the same stages of development. The colony augments and is differentiated; its parts become consolidated, and the whole again forms a single organism, a colonial individual. This is the *zoöid* of M. Perrier.

In their turn, these zoöids lead independent lives as distinct and ambulatory individuals, or they gather together in groups and by coalescence give rise to colonies of the tertiary degree. More complex adaptations than the preceding, yet analogous thereto, arise. The parts not only adapt themselves to the external conditions, but also to one another. Fusion, atrophy, and overlapping of organs result. Solidarity and harmony are established, and the result is again a single organism—the *deme* of M. Perrier. The higher invertebrates and all the vertebrates are demes. The human organism is a deme, that is to say, a consolidated colony of zoöids or zoönites of which the initial cellular aggregates are represented by anatomical elements.

Merides, zoöids, or demes; colonies of plastids, of merides, of zoöids, or of compounds thereof; colonies of elements of what degree of individualisation or solidarisation soever, all depend on the varied conditions of existence in which they are placed. In the higher animals the factor which seems to have the most influence is food. In the lower and middle invertebrates, it is difference of habitat and hindrances placed in the way of free development of parts. The animal is fixed or natant; it crawls about in the water, in the mud, or creeps about upon the earth. Of all the circumstances most favorable to its evolution and perfection, the first, beyond dispute are unrestricted liberty and struggle of the liveliest sort. Fixed colonies, says Perrier, never become completely transformed into individuals. Colonies which at liberty have attained a certain development, retrograde if they become fixed. Such is the predicament of the ascidians, which through having immobilised themselves have fallen from the rank of vertebrates to that of worms; and it is also the case with anatifa, the stalked barnacle, which is a degenerate crustacean. Among the causes which produce deviation of development is the formation of squamous valves, of a tubular

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or spiral calcareous case—the compressed parts atrophying. Another cause of deviation is parasitism. Certain zoöids or colonies of zoöids, on coming into media where life is easy and food constantly at hand, lose nearly all their organs except their digestive tube, and are practically reduced to the apparatus of reproduction. Slave-holding ants, becoming wholly incapacitated for self-support, die when deserted by their slaves. And yet these degenerate species on being restored to favorable habits regain their power of evolution in any direction. This is universally the case with ascidians. When they have attained their liberty they give birth to exuberant colonies called pyrosomes.

There is left us from our survey this fundamental fact. If evolution is to be profitable, progressive, and productive of its best results, the individual must conserve its full liberty, must possess its full power of reaction; in other words, for obtaining the normal play of the conditions of existence, no hindrance must be interposed. As the economists say: *laissez faire, laissez passer.*

In sum, evolution beginning with primitive protoplasmic bodies, has produced the metazoa by following five directions and proceeding from five sources. As enumerated by M. Edmond Perrier these are as follows: the larva of the sponges, the planula of the polyps, the gastrula of the echinoderms, the nauplius of the arthropods, and the trochosphere of the worms, from which are descended the vertebrates, and consequently man. This gigantic work was accomplished during untold ages substantially by means of *association* with its attendant consequences—division and specialisation of labor, functional and then morphological differentiation, reciprocal adaptation of parts, and finally their solidarisation, culminating by progression in unity.

Let us return to one of the primitive properties of protoplasm, to its excitability or reflexibility. In fact, this may be subdivided into two properties, as the preceding designations indicate. An infusory or organic debris passes in front of a moner and an excitation is produced: the matter is seized; this is reflexibility or reaction. Subsequently, on the protoplasmic substances or cells becoming aggregated, these two properties are combined and pass through the

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same stages as association. Like the latter they are differentiated according to position and according to needs. They partake of the fortunes of the different groups or individuals, which are here digestive, here reproductive, there nutritive, and there prehensile. They become severally strengthened in their distinctive characters, and appear in various forms. Excitability becomes buccal, visceral, tegumentary, exploratory, locomotor, or general sensibility. Reflexibility is made to harmonise with different sorts of corresponding reflex movements.

But physiological differentiations cannot persist without being followed by morphological differentiations. In the protoplasm or cell there is nothing material to indicate a differentiation of the two properties. At a certain stage, the repetition of the same impressions and of the same acts forcibly compels certain plastids to adapt themselves to the double rôle, and thus gives the impulse to their transformation. Thus are born, at this spot and at that, the first nervous fibres and nervous cells—fibres for the transmission of impressions or reactions, and cells as an intermediate focus of reflex action. This step accomplished, the rest proceeds of itself. The cells by association and multiplication become ganglia, the fibres nervous cords. The most active, the most necessary ganglia assume the hegemony. Each meride, each zoöid in a radiate or linear colony has its own ganglia. Their mutual adaptation is accomplished in the most favorable manner agreeably to the principles of necessity and economy; the superfluous ganglia disappear, others are newly formed, communication between them is strengthened. In short, the first type of a nervous system of high solidarity arises—the type which I call *ganglionary*, and of which the higher arthropods are an example.

A delicate question arises here. Where, when, and by what mechanism is the sense of personality formed which inheres in the merides, zoöids and demes—that is to say, the ego?

We have seen that the second property of protoplasm resolves itself into an excitation followed by a reaction. All inquirers do not look at matters in this simple light. A moner or an amœba presents itself to the observer under different aspects. It is immobile and

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has its pseudopods more or less extended or contracted; it roams about, impelled by influences wholly beyond our power of detection; it circles round a chance infusory or organic debris which has strayed in its path; and finally, when the latter has come within reach, it lengthens out its pseudopods and seizes it. In these phenomena, which are certainly rather complicated for so simple a being, some observers have seen intention, memory, and will, in a word have discovered in them an ego, obscure though it be. Others have held, and experimentally proved, that the property of performing movements, and particularly of lengthening and shortening pseudopods, can be effected by various physical and chemical agents. Shaking the water in which an amœba is immersed, touching it with a blunt needle, causes slight contraction of the pseudopods, and if the operation is repeated, marked contraction. At a temperature of 35° C. or thereabouts the movements of the amœba are exaggerated to the point of rigidity, below this they are normal, and lower still they are much weakened. Light is without action on amœbas but it causes bacteria and diatomes to run from its presence; a fact, parenthetically, which marks the degrees of development of motility in protists. Among chemical agents some attract, others repel amœbas; some excite, others destroy their movements; anæsthetics have the last effect. Oxygen stimulates their movements and its suppression stops them.

From these effects, to which those due to electricity might be added, it is permissible to conclude that protoplasmic bodies obey in a general manner the same influences that living matter much further up in the scale obeys. But they do not prove that the movements normally produced by natural stimuli, as by the passage of an infusory, are necessarily directed by any sort of centrosome. When a mineral with an avidity for oxygen discriminates and picks out that oxygen in a medium containing nitrogen and carbonic acid, we do not say that it exercises choice. Amœbas have been observed to perform the same movements in engulfing substances unfit for nutrition, such as fragments of hair, for example. An amœba which makes for an object or circles round an infusory, may be simply obeying the excitation which imperceptible disturb-

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ances in the water produce. If we attribute an ego to the simplest protists, by way of a preface to the ego which exists in high orders of metazoa, it would be incumbent upon us also to attribute it to sensitive and carboniferous plants, which would certainly be extravagant. And yet, if we grant the existence of individuality in unicellular beings, and that cannot be a subject of doubt, it is difficult to refuse to them a corresponding *sense* of individuality. The preferable course would be to admit that in the kingdom of protists, particularly before their differentiation into protozoans and protophytes, the properties of protoplasmic bodies, viewed singly, are of the physico-chemical order, that life is their result, but that the ego in however infinitesimal a degree we may assume is not yet existent,—in other words, that the movements in question may be classified as mechanical reactions following mechanical excitations. With this reservation, and for brevity of description, we shall not hesitate to make use of the word ego as a synonym for the virtual centre of individuality.

In the initial associations, the cellular individuals being all alike, there is no change. But when groups are formed, collective individualities, having a definite value, are constituted, each being in relation to particular functions of the group. From these spring and are to be distinguished a like number of *partial egos*, which busy themselves only with what immediately concerns them. Those buried in the depths of the aggregate interfere only in the obscure phenomena of digestion. Those which are superficially in contact with the exterior world are incessantly alert. The operations of the one set are restricted to a domain of limited interest, those of the others extend to important organs designed for the capture of prey and for its prehension, for attack and for defence. Naturally the latter attain a greater development. So long as the groups are not united by nervous elements, these egos will remain isolated and will sustain no relations with their neighbors, except through shocks mechanically transmitted from place to place. But as soon as the ganglia have centralised the individuality of each group, and as soon as the nerves have put them in mutual communication, each will take what is its due, a hierarchy will be established and the

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responsibilities be divided. There will be the particular interests of each partial ego, and the interests of those charged with the dominant functions and the general welfare. Each will have its independence in its own sphere, but in certain circumstances all will be solidary. Solidarity, however, implies some sort of general and higher ego.

In the generalised ganglionary period, at which we now are, acts are always reducible to an excitation followed by a reaction, but with the three following complications: (1) the conversion of the excitation into movement is no longer effected at the spot but in the nearest ganglion; (2) the ganglion discriminates between the different kinds of excitation and responds by simple or co-ordinated movements varying with the excitation; (3) the excitations occasionally pass beyond the ganglion and spread in greater or less degree to others. Suppose an impression is produced on the antenna of an insect. If it is slight, it will act locally on the cells or tissues, and the extremity of the antenna will wrinkle. If it be increased, it will be reflected to the nearest ganglion, and the antenna and jaws will be set in motion. If it is strong, the entire animal will respond to the reaction. Does an ego intervene in this last case? If the co-ordinated movements have already been produced and repeated under the same conditions and a habit has resulted, then this assumption is useless. But if the impression is novel, if there is occasion for a modification of the act, in a word, if initiative is needed, then necessarily an ego must intervene. But where on this hypothesis is its seat? In one or in several ganglia together? I conclude in several. Morphological unity does not exist as yet in the ganglion of the insect. The insect has its sense of individuality, it discriminates what is parcel of itself from what is extraneous to it. It has its subjectivity, but this subjectivity, its ego, is diffuse. All the facts set forth by Sir John Lubbock in his work on bees and ants, and by other authors who have written on this subject, confirm this conclusion.

At some unknown period in evolution a grand advance is made in the nervous system. A series of ganglia arising from the zoönites of a linear colony are fused into a long cord, the spinal cord of

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vertebrates. We know of no living animal limited exclusively to this organ, excepting the larva of the ascidian and amphioxus. But physiological experiments on ordinary vertebrates have indicated what would be its functions. In this hypothetical organism certain impressions will be converted into movements by scattered ganglia in the viscera and along the paths of the nerves; others, more intimately connected with exterior acts, would have their centres of reflex action and of co-ordination in particular zones of the cord; those which play a controlling part and induce modifications of the preceding movements would end in the sensorial ganglionary net of the cephalic extremity of the cord. We say in the net, because everything leads us to believe that the ego is as yet diffused.

The last and greatest progress is accomplished when around the sensory ganglia of the extremity of the cord a proliferation is produced of the cells and nervous fibres, which gives rise to the cerebral hemispheres. Henceforward there is no more doubt, the centralisation of the ego is effected, it has found its true expression; seemingly the ego has been transported from the cord to these new organs, but it is so only in appearance. It is a new ego, *sui generis* and intelligent, that has been formed. The ganglia of the body continue their organic rôles and maintain their petty individualities. The cord fulfils the same functions and also preserves its powerful individuality. The hemispheres are simply a superadded organ—the organ of thought.

Ganglionary animals (Insects, etc.) do not think; they reflect impressions, by associating or not associating under given conditions the action of several ganglia. Animals having hemispheres, that is to say, vertebrates, alone think. Rudimentary thought at its beginning in the lizards of M. Delbœuf, in the crocodiles of the Nile, and in fishes generally; having less value perhaps at this period than apparently it has in certain ganglionary animals; but already reaching considerable heights in the birds and the mammals, attaining its highest in man, and always proportional to the diverse morphological factors of which it is the result! Through it, the ego of the hemispheres intervenes, occasionally, and at its leisure, more or less conscious of its motives of action, suspending, accelerating,

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or modifying the co-ordinated acts relating to its exterior life, of which the cord still remains the centre of production. The scattered ganglia have their habits, the results of the repetition of the same acts confirmed by time; the cord has its habits; the hemispheres have also their habits, but of a different kind. The hemispheres alone when their attention is sufficiently solicited, when the interest, pleasure, or caprice of the individual is at stake, and when they will it, are able to alter their own habits and those of the cord. They alone represent the reasoning ego.

It follows from this examination that the ego, such as we have experience of it in ourselves, is the final product of a long evolution which can be reduced to four stages. In the first, or in the solitary cells of the protist kingdom, it existed merely in a potential state. In the second, or in the non-solidarised colonies, it was presented in the form of partial and scattered egos whose sphere was restricted to the special functions with which the group that each represented was clothed. In the third, or in the solidarised colonies of the generalised ganglionary type, it had its seat in a diffuse form in the main regulative ganglia, and as yet furnished but a vague sentiment of general individuality. In the fourth, or in the vertebrates, it is housed in a special organ subsequently superadded; here it had its modest birth, developed little by little, and ended at the summit of the scale by becoming the mighty ego of man.

Virtual, diffused, or centralised, its rôle in all animals is to afford individuals the sentiment of their conservation, of their needs, and to force them to obey the injunctions of nature on penalty of annihilation. In its highest degree it comprises memories of the past, acts, sensations, and thoughts, the sum-total of its internal and external impressions; it gives to the individual the sentiment of its present corporeal existence and the notion even of its faculties and intellectual operations: *cogito ergo sum.* Animals provided with hemispheres alone think; man alone knows that he thinks. The ego is the consciousness of self—it is the soul.

Let us go back to the first law, not of life, but of the conservation of life in individuals, be it protoplasm, cell, meride, zoöid, or deme—the obligation to conform to circumstances, that is to satisfy

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their needs while yielding to outward necessity and acting in the best interests of the organism. The partial egos had control of the individual functioning of each group or organ to which they belonged. The diffused ego, predominating in certain ganglia, was charged with more general interests, such as related to the exterior world. The centralised ego was established to look after the same interests but was vested with more authority. This is its whole part. It distinguishes what is external to it from what is within the sphere of its interests. The external world is indifferent to it, according as it does not or cannot affect its existence. It has no other concern but to perceive and foresee. It refers all things to itself; it is zoöcentric, that is to say, egoistic. We cannot conceive of a unicellular or multicellular animal that is not egoistic. It is the very essence of individuals. It remains to be seen whether this egoism cannot assume different forms, and whether it is not subject to differentiation according to the law controlling all properties, functions, and organs.

The acts of animals always involve conservation. In the protoplasm or cell, in the sponge or the polyp, before the nervous elements have made their appearance, it is contained in the good which results therefrom for the organism and in the evil which is avoided thereby. The good is useful to the individual as the bad is harmful. Later, when the first nervous elements have appeared and sensibility has become established, the impressions are distinguished into pleasurable and into painful; all partial egos, be they inward or superficial, are aware of this distinction, each in the matters which concern it. These impressions at a given moment become accentuated, constitute actual feelings of pleasure and pain, and remain henceforward the criterion *par excellence* impelling the animal to act in this or that direction. The diffused ego of crustaceans and of insects, scarce holding predominance in certain ganglia, has certainly no other immediate guide. The ego of the vertebrates centralised in a special organ is in the same predicament: impressions of pleasure and of pain coming from the periphery or awakened in the hemispheres by the recollection of prior impressions are the determining causes of reactions. Here a new factor intervenes.

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To avoid immediate pain, to experience immediate pleasure and by means thereof to obey the direct injunctions of the external world has been hitherto the sole motive spring of action. But the ganglia, the spinal cord, and particularly the hemispheres have become complex organs endowed with new properties, the result of differentiation. They no longer restrict themselves to brutally responding to present peripheral sensations. The impression agitates the organism in its entirety, awakens prior impressions which memory has stored up in latent forms; the response need not be that which the impression of the moment demands, but that which awakened prior impressions prefer. We have here an association of impressions as in a different sphere we have an association of ideas. Actions are most frequently the result of such a process. And hence we arrive at a second formula—the shunning of circumstances wherein previously pain was produced and the seeking those in which pleasure was felt. The lizards of M. Delbœuf creep into their keeper's hand in order to find there the agreeable warmth which they have experienced before; they allow themselves to be caressed because the passage of his hand over their rough skin has previously occasioned them pleasure of which they preserve a lively recollection. The crocodile who flees when he sees the stick with which he has been struck, obeys the impression aroused by the present impression and not the present one itself. Animals generally are led thus to approach individuals of their own and other species who have never done them harm and with whom are associated recollections of pleasure. They return to such persons and acquire the habit of doing so. This custom being repeated from generation to generation, a particular sentiment is formed, increases, and the habit thus established becomes a need—the need of living with others, sociability.

A remark as to the advantages procured by this life in common. The animal is less frequently attacked by his habitual enemies; he has a chance of concealing himself in the mass of his fellows in times of danger; one or another of his companions possesses qualities by which he may profit. His interest and pleasure combining to start him on this path, this animal will, unawares to

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himself, gradually come to love his comrades. On occasions he will represent to himself their joys and their sorrows, will endeavor to feel and to share them. As the sight or memory of delicious morsels makes his mouth water, so he may be led to shed tears, as seals do. At the right moment he will run to the aid of his fellows, will perhaps forget his own personality to save them, and may be capable by reflex instigation of the most praiseworthy devotion. It signifies little that the habit has grown up progressively without his suspecting it; that the first cause and the secondary causes were the pleasure felt; that the personal interest of the organism was the direct or indirect motive. The unconscious sentiment which responds to it is designated altruism. Sociability and altruism are joint terms. They imply mutual concessions, advantages mutually tendered, and consequently a lessening of egoism. This latter is the love of self, altruism is the love of others, in various but marked degrees.

The difficulty is that the two frequently come into conflict; that personal interest, the first by birth, is of the essence of personality and has anteriorly contracted deep-rooted habits which never lose their hold; that the altruistic habits which are born subsequently are more feeble and less direct; and that in all struggles the first have the advantage. The life of animals like that of man daily offers examples of this conflict. Happily for altruism the animal is extremely spontaneous. He thinks little or only obscurely before acting. He readily abandons himself to secondary automatic impulses. Habits are his second nature, they are multiple and conflicting; the animal obeys the strongest at the moment, according as circumstances favor the one or the other, or as reflexes of this or that character intervene with more or less rapidity. The animal, like man, frequently yields to temptations which can only involve him in pain; sacrifices a useful act for some immediate pleasure. He has his passions, and is subject to all the forms of nervosity, some coming from his egoism, others from his altruism. But when equilibrium has been restored, when the individual has gotten possession of himself again, when he has recovered the sentiment of his conservation, and the memory of the pains and pleas-

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ures consequent upon his acts, when he is put in a position to choose,—his ego, that is to say, his true interests, once more regain the upper hand and direct his conduct.

Certain peculiarities of the animal organism of vertebrates reenforce the predispositions to sociability and altruism as just described. One of the most remarkable characteristics of life is its property of extending itself, of propagating itself like the flames of a conflagration, of multiplying, and of never being fully satisfied in this regard. This, properly speaking, is the primal cause of evolution. Every cell increases, every organ augments, every function expands proportionately to its activity. This exuberance in the young, where anabolism predominates over catabolism, to use the jargon of the day, engenders an excess of muscular activity which requires expansion and of which one form is the need of play. Insects often show traces of it; it becomes marked among the fishes and reptiles, and is quite pronounced in birds and mammals. The Felidæ and Canidæ run, gambol, wrestle, caress and maul each other from sheer joy. The life of monkeys is passed almost entirely in play. Although this need diminishes in adults and disappears among the old, it could not help contributing strongly to the formation of groups. The same exuberance of life impels animals to be noisy, if I may so generalise the idea. There is the so-called cry of insects, the croaking of frogs, the singing of birds, and the various means of communication which obtain among animals. But these manifestations of activity on the part of certain organs are contagious through imitation; they draw auditors and solicit admirers. There is no doubt but this factor has contributed largely to establishing *rapprochements*. If we wished to adduce the case of man, the proof would be easy, but it is sufficient to recall to mind the case of birds, of nocturnal carnivora, and of certain monkeys.

The same exuberance of life has resulted in the irresistible need of testing the range of one's power, and of making extensive use of it, of directing one's actions to surrounding things, especially to animated nature, and particularly to one's fellows. This is the impulse of appropriating prey which has been captured, of taking

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possession of the caves used for shelter, of the territory of the chase, or of the pasture to which one is accustomed; it is the need of exerting one's authority, of subjecting, of protecting, of reigning, and even of tyrannising.

But if there is exuberance of life and sense of force in some, on the other hand and comparatively there is the sentiment of weakness and the need of protection in others. Indolent, slothful, or really inferior, these feel themselves incapable, less fitted to cope with circumstances, to supply their needs, to defend themselves; they require assistance, protection, participation in groups where they are less isolated. Hence arises the natural division of individuals, as of species, into the strong and the weak, the protectors and the protected, the courageous and the timid, into individuals predisposed to egoism and to combat, and individuals predisposed to altruism and to quietness. This distinction exists in their life as a whole as well as in that of sex. The male is strong and exploits his power, the female is weak and yields in her weakness. These two factors—directing and being directed—are extremely influential in the formation of social groups.

It would be supererogatory to remark how these various springs of action, which are ultimately reducible to two,—the need of affirming and of satisfying one's ego and the need of taking possession of the non-ego,—must necessarily exert a powerful influence on the development in animal societies of likes and dislikes, passions and active or sensitive faculties. Egoism and force engender emulation, the desire to do better and more, self-love, pride, jealousy, hate, the spirit of reprisal. Weakness inspires submission, sympathy, recognition, suffering, fear, love. But we must not enter on this subject, as it would carry us too far.

Let us recapitulate:—egoism is the expression of the centralised ego. It is love of self. The need of a large life, with a maximum of pleasure and a minimum of pain.

Altruism in its general sense is the love of what is outside of self, or, to be more precise, the love of that which promotes, or tends to promote, the welfare of self. Nevertheless, the word in its particular sense applies only to fellow or kindred creatures.

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Altruism is a differentiation of egoism. We ought to say—the altruistic *interest*.

To be in connexion with the exterior world, to receive exterior excitations, and to multiply the sources of enjoyment which they afford, is a need of the organism which grows in intensity according as the central sensibility is more developed in the individual and in the species. It leads to the need of living with one's fellows, or to sociability.

To seek assistance and protection, to share difficulties, to desire much and give little, is the characteristic of personal interest. It also leads to association.

The ego and the association of egos are the two poles of evolution. In the merides and zoöids the egos are weakened by the progress of solidarity. In the demes, associating under other conditions and under the name of animal societies, the egos maintain on the contrary almost their entire independence. But is this detrimental to the solidarity? This we shall discover by degrees.

* * *

A few words, before continuing, on reproduction. It is of two kinds—asexual and sexual. In the first, a part of the individual separates by scission or by gemmation; in the second two elements, differentiated in opposite senses, unite into one. Reproduction by scission is peculiar to individuals formed of a single cell; it is to be met with, however, among certain merides or zoöids, such as Medusa, Asterias, and Microstoma. In the latter it furnishes the key to the formation of linear colonies. It is maintained in the vertebrates in particular cases and for the multiplication of anatomical elements, like the cells of the epidermis and the cells of the glandular secretions. Reproduction by gemmation is a second stage of asexual reproduction. It is peculiar to the lower invertebrates, where it multiplies individuals, completes colonies, and frequently alternates with sexual generation, which tends more and more to take its place. Sexual reproduction is the definitive stage. It becomes established as the types get fixed and determinate species are constituted. Elementary in some protists, it becomes more common in the lower invertebrates and is generalised in the higher

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invertebrates and in the vertebrates. It consists essentially of the co-operation of two different cells, one male and one female, which are blended into one, possessing the combined latent characters of both. From the protozoans to man all gradations of sexual generation are observable.

At first, there are two cells, presenting no appreciable differences, but which meet, exchange parts of their nuclei, and then separate to continue independently their existence and to reproduce by the ordinary process of division met with in unicellular organisms. It would be opportune to ask here, what the utility is of such a union, which apparently effects no change? These two cells, it is asserted, have severally exhausted their capability of division and have nothing left but to die until the exchange which is made rejuvenates them and renders them fit to pursue a new career. In the second stage, two cells, still alike, blend totally and form but one, which reproduces the type of the common parents. Here, some will add, teleologists no doubt, that the divergent characters are neutralised in this manner and that the common characters, being better transmitted, assure the perpetuity of the type. Be it so. But that does not suit with the theory of Weismann that the differences between two copulants alone produce the variations of type which natural selection subsequently makes use of. In the subsequent stages the two cells become gradually differentiated morphologically and take on the characters of their respective sexes. The female is large and passive, the male is small, lively, and flagellate. Subsequently the profound phenomena of fecundation are exhibited and the fecundated ovum pursues its ontogenetic evolution by reproducing in epitomised form the phases through which has passed the phylogeny of its parents.

Here a difficulty arises, touching the conjunction of the two sexual elements. At the start in the metazoa the two reproducers are individuals, differentiated in opposite senses but belonging to the same colony; the distance for meeting is short, chance favored by currents produces the conjunction. For some time, in radiate and lineal colonies, the sexes continue thus united in the same individual, which is styled monœcious. But gradually they get distrib-

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uted on different individuals. A succession of cases shows the transitions. Thus, one individual is hermaphroditic and plays in juxtaposition with another the rôle of both male and female simultaneously, and afterwards successively. When in these conditions one of the rôles is weakened, the corresponding genital apparatus becomes atrophied and the individual remains either male or female as the case may be.

All vertebrates to which we limit ourselves, are bisexual. In a very early phase of evolution the female restricts itself to depositing its ova in places where they are afterwards fecundated by the male. Neither the one nor the other is solicitous as to consequences. The young break their eggs as best they can, immense numbers perish for want of care, but the prodigious fecundity of the female compensates the losses. At this point evolution seems to hesitate as to the direction which it will follow. In some fishes and batrachians the male takes charge of the eggs, but this care does not extend to the young. Selection, the supreme judge of the value of the path followed, has pronounced itself against this system. Then appears the second phase in which the responsibility for the eggs and the young falls entirely upon the female. This is evidently the procedure which best assures the perpetuation of the species. Adaptation to necessity has acted wisely. But is there not corresponding to this specialisation of the final phases of reproduction in the female some useful complement, some assistance on the part of the male who has co-operated in the initial operation? In some invertebrates he dies after having fulfilled his task; in the vertebrates he lives. And here intervenes an instinct, a special sentiment, which is to the general function of reproduction what the ego in egoism is to the general function of relation to the external world.

The germ of this instinct is discovered in the fecundation of the very lowest beings. The attraction which leads the female cell to the male cell is visible: the one rests immovable, the other advances towards it, and before union gives evidence by its movements of genuine agitation. In some fishes, less indifferent than the general run, a like agitation called rut or heat is observed accompanied at times by concomitant and diverse physiological phe-

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nomena, such as a change of color of their external scaly integument. It leads in some reptiles, and then in all birds and mammals, to the phenomena of copulation.[1] But at this stage is awakened in the female a sentiment of a quite special character and without precedent in the phylogenetic line. There is an obscure presentiment of it in certain reptiles, and it reaches its highest expression in the birds and the mammals. It is the sentiment of the proprietorship of eggs and of the young—*maternal love*, one of the most admirable creations of evolution. A similar sentiment is developed in the male, but obscurely and laboriously, being subject to numerous exceptions here, and varying from zero to perfection. After rut the male becomes attached to the female, protects her, and transfers his cares and affections to the little ones which are born from her. From the sexual union of the two results a family union which generally lasts until the young are able to take care of themselves.

Such, rapidly sketched, are the phases which beginning with the differentiation of the sexes in the first cells have led to their separation in individuals and, in this, from complete indifference to offspring to association in families having in view the training of children. It remains for us to pass on to the facts.

II. THE ANIMAL FAMILY.

Whatever may be our attendant regrets, for the subject is interesting particularly among hymenopterous insects, we shall pass by the invertebrates and confine ourselves to the vertebrates, a province sufficiently vast in itself. Three forms of association are presented to us, the first intermittent, between two individuals of different sexes, with a view to reproduction; the second, eventual, between two or several individuals, with a view to mutual assistance and companionship; the third, temporary or permanent, under the form of assemblages or societies.

We shall commence with the first and devote some space to it.

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[1] Some fishes, it has been observed, already present phenomena of interior fecundation.

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The facts involved are of a special nature; they are either mingled with or alternate with those which refer to societies, and they render the latter facts obscure; the family in which they culminate is regarded rightly or wrongly as the foundation—the formative cell, as it has been called—of societies. There are disadvantages attending the separation of the two subjects and there is danger of repetition; but the drawbacks are outweighed by the advantages.

The Fishes come first. They are divided into two groups. The first is that in which the young are born alive and where there is interior fecundation, and the second is that in which the female lays its eggs in some place, selected or not selected, where they are fecundated by the male. The majority of cartilaginous fishes and some bony fishes belong to the first class. The others, which constitute the great majority, belong to the second. Among the first a certain degree of maternal love apparently exists. A female plagiostome has been observed swimming in company with her young, which she would not abandon until they were able to look out for themselves. In the second, considerable variation is noticeable. At first there is complete indifference; the female lays, but evinces no further concern for, her eggs; the male passes over and fecundates them but likewise exhibits no solicitude for their fate. But at times a certain attraction is manifested between the two sexes without copulation. The female when laying her eggs is followed by one or several males. An agitation analogous to that of rut has been observed in the male, its object being either the female or the eggs laid. This rut proceeds so far as to occasion combats between rivals. The male conjointly with the female, or alone, prepares a sort of nest. One or the other, or both, watch over the eggs. I have seen in the aquarium at Naples a fish living with a female companion and even exhibiting extreme jealousy. The most curious case is that of Gasterosteus. It very carefully and by its own exertions constructs a cylindrical nest; to this it conducts a female and expresses its joy while the latter is laying her eggs, whereupon it goes in search of another; it then walls up the entrance to the nest, watches over the eggs until they have been hatched, and defends them against females which visit the place with the intention of de-

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vouring them; finally, it takes care of the little ones and does not give them their liberty until they have no longer need of its protection. Other and more astonishing cases still are the following: that of several male Lophobranchii, who harvest the eggs and taking their station directly upon them protect them until they are hatched; that of Hippocampus and Syngnathus in which the eggs are kept in a ventral or caudal pouch; that of two or three species in which the male hatches the eggs in its mouth.

Sent living into the world, or hatched by themselves, the young of fishes, consequently, are abandoned and perish in large numbers on account of lack of care. But the prodigious fecundity of the majority compensates this loss. The salmon lays nearly twenty-five thousand eggs, the sturgeon millions. Finally, diverse tendencies are manifested as regards the care of the young, some species leaving to the mother the reproductive rôle until the very end, and others confiding it to the father. Is it maternal love or paternal love which is destined to gain the ascendency? There is also a quite curious marsupial tendency. Evolution seems undecided as to the most advantageous path to follow.

The anurous Batrachia come next, and after them the urodelous. The first deposit their eggs in the water or in the sand, where they are fecundated in an unknown manner. Incomplete coition is effected in some species, the eggs being fecundated as they are produced. A few special cases must be noted. In the South-American Surinam toad, the male places the eggs on the back of the female, where they sink in and are hatched in tiny cellules. In other anurans, the male winds chaplets of eggs around his legs, and devotes to them the proper care till birth, when the young are abandoned. In *Nototrema marsupialis*, incubation is effected in a special pouch carried on the back of the female. Evolution is again making attempts in different directions. Is it the father or the mother that is to have charge of the eggs? On quitting the oviduct, whither are the eggs to pass? Into a pouch furnished by the male, or into a pouch furnished by the female? Of brooding or sitting here, there is no question.

The Urodela enter a new phase. Here, says Espinas, "the

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males fecundate the eggs in the body of the female." Of these eggs, which are laid subsequently, some care is taken by the female; but the male is ignorant of their whereabouts. This, in conjunction with certain facts presented by the anurans and fishes, has led Espinas to a theory which we shall state as follows: When the female lays her eggs, she is relieved, and abandons them without further concern. When the male afterwards approaches, and expends upon them the ardor of rut, he regards them as his own property and takes upon himself the responsibility of their charge.

In the Reptiles, all hesitation is at an end. Fecundation always takes place in the interior, previously to laying, and by copulation. The female lays fecundated eggs; conceals them more or less carefully; but as a rule shows little further concern for them. She believes her task is finished and is not prompted to continue it further. Nevertheless, some females watch their eggs a little, or even sit on them. Some, after hatching, carry their young to a place of safety, or lead them to the water, but afterwards they forsake them. In the trigonocephalous serpents of Martinique, and in the cayman alligator, the female takes care of them for a longer time. In the latter she has been seen to defend them with great fury and has exhibited symptoms of genuine maternal love. As to the male, his rôle is almost entirely limited to copulation. Some reptiles fight at the period of rut; some go in pairs. In certain crocodiles, the male and the female sit in turns. Some males even go as far as to assist the female in hatching. The most instructive case is that of the Iguana. This lizard lives during a portion of the year with the same female and will vigorously defend her against others of his species, as he would his own property. But neither takes charge of the eggs or of the young. They have the sexual passion only. With the rattlesnake it is the same. Male and female wander lovingly about together, embrace at times, but leave their eggs to hatch alone.

To sum up, in the four groups which we have examined, isolated cases exhibit different tendencies, some of which open the way to what is to become habitual in the succeeding groups. Omitting details, the following is the outcome. In the Fishes and the

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anurous Batrachia, there is no maternal sentiment, but as an offset there are rudiments of a paternal sentiment, arising from the circumstance that the passion accompanying rut, not being awakened by the female, is expended entirely upon the eggs and tends to be continued in favor of the young. In the urodelan Batrachia and in the Reptiles, copulation changes the situation. The ardor of rut is mutual and engenders a pronounced bilateral sexual sentiment. This moment past, the male takes no heed of the consequences; the female, left to itself, lays the fertilised eggs and takes charge of them, but does not go much farther. The maternal sentiment begins to dawn, but the paternal sentiment is zero.

Here are presented the two branches which have sprung from the reptiles—namely, the Birds and the Mammals; and in these are accentuated and generalised the exceptional cases which have preceded, and which are most favorable for the direction which is now to follow. But before proceeding we must make a digression, in order to assign the precise meaning of the terms which we are to employ.

The phenomena of reproduction in Birds and Mammals are divisible into three acts. In the first, we have rut, copulation, and fecundation, which are consecrated by a more or less intense sexual love. The second is represented by the incubation of the eggs in the case of Birds, and by gestation in Mammals. The female is here either left to herself or lives with the male. In the last case we have the conjugal period, to which corresponds conjugal love. The third stage begins with the birth of the young and continues till the latter are able to take care of themselves. This is the family period. The family is *maternal* when the mother, left entirely to herself, alone has charge of the young; it is *paternal-maternal* when the father associates with the mother; it is *paternal*, if we may call it so, when the male, having several females, is the centre of the family. Espinas has not considered this last distinction. The care taken by the mother being a constant fact without which in the Birds and Mammals it is almost impossible to conceive the young being raised,—we shall reserve the name of family proper for the last two forms.

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Family, then, for us, is constituted by the association of three elements: a male, one or several females, and one or several offspring. Its consecration is family love, which is distinguished into maternal love, paternal love, and filial love, to which must be added conjugal love—a legacy of the preceding period.

One word more. In the pages to follow we shall speak only of wild species, roaming at large. Domestication and even simple sequestration in zoölogical gardens frequently produce modifications in the phenomena of reproduction, as they also do, in even greater degree, in the social instincts.

Birds. The specialisation of the sexes has been distinctly effected here. The principal rôle falls to the male in the first period, while in the female is vested the direct responsibility in the third and the second. Let us consider them separately.

The female, in the first period, plays the passive rôle. She is coquettish, but reserved, allows herself to be seduced, abandons herself with grace, is obedient to the male, even when he is fickle, and generally remains faithful to him. Among the exceptions to the last rule are, it is said, certain doves whom the sexual sense absolutely infatuates. In the second period, the laying and even more so the brooding of eggs occupies her whole attention. She is still attached to her spouse, but on the condition that he respects her eggs. If he does not do so, she abandons him and conceals the eggs. In the third period, all is concentrated on one sentiment: care of the loved young ones. The attachment which is still reserved for the spouse is proportioned to the part which he takes in this care. If her spouse leaves her, her devotion, foresight, and ardor in defending her young increases commensurately. The hen is the model type of maternal love. The instinct of brooding is carried so far here that certain females of the eider-duck will plunder one another's nests to obtain more eggs. Her tenacity in sitting, and in covering her unfeathered young in her nest, is sometimes such that she cannot be driven away, as is the case, for example, with the kingfisher. If her eggs be broken or her young die, she will repair again to the male who has abandoned her, or to another, to be fecundated afresh. We may furtively introduce

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strange eggs into her nest, and she will care for the young with the same solicitude. She will adopt the orphans of another mother. In a word, the maternal instinct is consolidated in her in its last degree of efficiency, and is one of the marvels of adaptation to ends. Enfeebled forms of these qualities are met with in only a few cases, as for example in the ostrich, the cuckoo, the molothrus, the ring-dove, the tetragalle of Australia, and, according to Van Beneden, in the phalarope.

The male, in the first period, on the contrary, plays an active rôle. He chooses his female, fascinates her by his song and by demonstrations of all sorts, gives combat to his rivals, at times in real Homeric style, then copulates upon the spot, or, more frequently, leads her victoriously off. In the subsequent periods, his rôle being optional, his conduct varies. At times he remains with the female and sympathetically shares her labors; at others he basely abandons her in a spirit of contemptible egotism.

Let us follow the first case. During the conjugal period he assists the female in the construction of the nest or does it alone, fetches food, entertains her by his songs, takes turns with her in sitting or even sits alone (Rhea, Phalarope), and shares both her joys and her sorrows. Audubon recounts that *Muscicapa fulva* exhibits great agitation while its female is laying, that it encourages her, and when the operation is finished soars off in her company with great joy. During the family period, the picture is a charming one. Male and female are intimately united in the same sentiment; they vie with each other in their efforts to cause the young to swallow the food which each has furnished; they teach them to fly and to hunt.

In the second case, of the female's abandonment, three degrees are presented. In the first the abandonment is complete and immediate, directly after the male has satisfied his sexual desire or has become exhausted. Examples are the turkey, the pheasant, the prairie-chicken, and in fact the majority of the Gallinaceæ and some stilt-birds and palmipeds. Let us take the turkey. The two sexes habitually live apart. In the spring the female approaches and calls. The male hastens by, abandons himself to all the affecta-

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tions accompanying rut, and copulation begins. As soon as the female begins to lay, her sexual desire is extinguished; she gradually withdraws; the male seeks her, exhibits dissatisfaction, is jealous of the eggs, which he seeks to devour and which the female defends. He finally seeks solace in renunciation, retires for a while to recoup his strength, and at last returns to his friends without exhibiting further concern for the female or her young, or rather for his females, as he is polygamous in rut. In the second degree the male prolongs slightly his stay, withdraws from time to time, returns at night, waits until the female has finished laying, and then quits her definitively. Such is the case of the eider-duck and the quail. In the third degree he abandons the female sooner or later, but returns to her when the young are born and have progressed slightly, and then takes upon himself the direction of the family. Examples are the hazel-grouse, the wood-cock, wild duck, and great bustard. I should add that among those of the first degree there are some who return to their female when the young are emancipated and voluntarily remain in her company until the succeeding rut, when the various stages are repeated.

In fact, correct unions—conjugal in the second period and familiary in the third—are the rule among birds. There are divers types. The type Raptores forms intimate unions, but is profoundly egotistical from wildness. Its couples are monogamous, live apart with their young, and savagely repel all attacks on their nests. Again there is the type of several stilt-birds and of palmipeds like the swan; in the latter the family-circle is rigorously closed; all are closely attached to one another; this again is egoism, but it is from excessive mutual love. Further, there is the type of monogamous pigeons, of which the second and third periods are merely a continuation of the sexual period which is always intense. The care here taken of the young seems accessory, a sort of playfulness, and a constant occasion of sexual love; at times in certain of these species the young are greatly neglected. Then there is the type Rhea, the American ostrich, polygamous from rut until the rearing of the young is completed. The last and most widely spread type is met with in the Passeres, Corvidæ, Hirundinidæ, the majority of stilt-

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birds and palmipeds, and in some sea-birds. Its most complete expression is found among the parrots. Sexual love, conjugal love, and family love are here blended into a whole and leave hardly anything to be desired.

A few particular cases do not fall under the two preceding categories—namely, the purely maternal family and the paternal-maternal family. One case is that of the tetragalle of Australia in which the eggs are left to themselves and hatch alone. Another is that of Rhea in which the male broods by itself all the eggs laid by its females. That of the ordinary ostrich approaches to this type and deserves a few words in detail. It is polygamous; the females lay their eggs in the sand and conceal them on retiring. During the day when the rays of the sun are strong, they sit on their eggs alternately with the male but irregularly; during the night the latter alone sits. When the young are hatched, all join in taking care of them, but the father, we are assured, exhibits the greatest solicitude. The strangest case is that of a certain number of birds who occasionally or constantly lay eggs in the nests of other species and thus shirk the cares of maternity. Examples are the honey-guide or indicator-bird, the cow-troopial or molothrus, and the cuckoo. We have seen many unnatural males among birds, but unnatural females of the stripe of tetragalle and molothrus are rare. The female of the latter indulges in the most shamefaced polyandry, contracts conjugal unions of no sort, and when moved to lay seeks out in the thicket the nest of some other bird where it deposits its eggs and never again thinks of them. The cuckoo is better off; he has a female and lives with her. The latter lays her eggs in the nests of different other birds but returns from time to time to see whether their foster mother has taken care of them. When the young are able to fly she comes to them with her spouse, calls them, and thereafter both take charge of their education.

The Birds are monogamous or polygamous in the period of rut, but the males who live with their females during the second and third periods are all monogamous. The exceptions are so rare that they hardly count for anything. There are from one to three broods a year; the same couple, as a rule, remain together during the whole

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term. Almost always this couple separates when the bringing up of the last brood has been completed. But sometimes they continue their conjugal union until the succeeding rut; frequently this union lasts for years if not indefinitely. Examples of this type are the eagle, *Picus principalis*, and the stork.

The purely maternal or the paternal-maternal family in some exceptional cases breaks up before the young are able to venture from their nests, as is the case with the albatross. Usually it is prolonged until the young are able to take care of themselves, or even until their education is finished, if the return of the sexual desire permits of it. In the species having two or three broods a season, its return in most cases virtually puts a premature end to the family, the double maternal and paternal instinct disappears, the married couple again becoming lovers expel willy-nilly the young from the nest. Two broods, however, may succeed each other in exceptional cases and live on good terms. In the water-hen the young of the second brood fraternise with those of the first and assist their mother.

The young have no desire at first but to get out of the nest and then to prolong their excursions. They make the attempt, fly away, return at night, and end by never coming back at all. They then generally wander about with their brothers, the time varying with the habits of the species, but in all cases they emancipate themselves on the appearance of the sexual desire. From that time on all is ended. Parents and children recognise one another no longer. There is no reminiscence of family sentiment discoverable in them.

To recapitulate, evolution tends towards the most favorable conditions for attaining the ends of reproduction, outlined in the fishes and reptiles and reaching in the majority of birds approximate perfection. It is no longer the isolated male or the isolated female who has charge of the development of the young, either within or without the egg. A contract of union is established between the two agents of reproduction, an association has been effected, a more or less powerful sentiment unites the male to the

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female and to their young. The two concur in the work, each according to its organisation.

In both, the initial period is what one would imagine it ought to be physiologically. The ardor of rut is sufficient and moderate in the female, who is passive. It is violent and capable of overturning all obstacles in the male, who is active. In the later periods the mother has the entire direct responsibility, she is equal to her task, and fulfils it with a tenacity and continuity which is marvellous. The instinct corresponding to the two periods is in her as firmly established and consolidated as is necessary. In the same periods a goodly number of males have taken no step forward, have acquired nothing which is useful to the species; but in the grand majority an instinct at once conjugal and familiary is established which leaves little to be desired. On one hand and on the other it is the triumphing of adaptation of means to ends.

There are still, however, a few discouraging features. One is the rapidity with which the sexual needs put an end to the family life, the drawbacks of which affect the second part of the rearing of the young, namely, their education. The cause at fault here is plainly the plurality of broods. For progress to ensue, it is necessary that these should be reduced to one per year. The second point is the mutual forgetfulness of parents and offspring for one another after separation, and particularly when the latter have attained puberty. But the end has been accomplished, some will say; the species has been renewed, the parents have fulfilled their task.

Mammals. The exterior phases of reproduction differ here slightly from those observed in birds. The second period is frequently long, brooding being replaced by gestation. The third period may be divided into three: nursing which concerns the mother only, the interval between this period and that in which the young have become entirely emancipated, which is short, and the time which subsequently elapses before puberty, during which the young are either free or still follow from habit the footsteps of the mother.

Mammals from the point of view of family or of society, as we

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shall see later on, may apparently be divided into three groups: first, the lower mammals comprising the Monotremata, the Edentata or Insectivora, and the Marsupialia; secondly, the higher mammals comprising the Ungulata, the Carnivora, and the Monkeys, men forming a class apart; and lastly, the intermediary mammals.

The Monótremata, the Edentata, and the Insectivora are the lowest with regard to family. The armadillo meets a female, copulates and goes his way. The Sorex is little better; the male and female, when not in the period of rut, devour each other whenever they can. Nevertheless, some couples keep together until the period of the young, namely, in the Onithorynchus, the great ant-eater, the hedge-hog, and the mole.

In the marsupials the instinct of maternal love is naturally quite pronounced. Gestation lasts with them about a month, but for a space of six to eight months the young occupy an abdominal pouch where they are entirely in the hands of the mother. In the wombat, however, she ceases to interest herself in them after they have quitted the pouch, but in others she continues to bestow upon them the most assiduous care. The opossum is a model of maternal love. *Phalangista* and *Phascolarctos* carry their young on their back, clinging to their long tails. As to the male, he is indifferent after rut. In the kangaroo the male has been observed to approach and to contemplate with curiosity the young who show their heads from the pouch. In the flying squirrel he assists in forming little families.

The Chiroptera, allies of the Insectivora, are no better with regard to family. Bats copulate and do not seek each other again until the succeeding rut. The mother has sole charge of the little ones, exhibits affection for them, and carries them around clinging to her body. The reappearance of the sexual desire alone puts an end to her maternal love. The Rodentia offer various types, but as a rule these are little favorable to family life and even to the development of maternal functions. The first type is that of the hamster (*Cricetus*). The male repairs to the abode of the female, copulates, lives with her for some time on good terms, and finally

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leaves her. The female, five weeks after, bears five or six young, which she fosters for some fifteen days and finally drives away when they are able to take care of themselves. The dormouse (*Myosus*), *Eliomys*, the porcupine, rats and mice, the vole (*Arvicola*) and the lemming (*Myodes*) belong to the same class. With the meadow-mouse or vole, the solicitude of the mother turns to indifference as the young grow able to take care of themselves. A second type is that of the hare; he never abandons his female for the reason that he is always in rut, as is also she, even during gestation. But more scandalous is its behaviour towards its children. There is not a trace of maternal love in the female; she carries her young thirty days, casts her litter of two to five upon the bare ground, cares for them at most but a few days and abandons them, only returning to them when her milk burdens her. A third type is that of the beaver. It presents phenomena similar to those which we have met with in some birds. The male abandons the female after rut, and does not return to her till several months after, when their two to four young have grown large enough to move about (Audubon and Bachman). A fourth type is that of certain squirrels, the male and female of which keep house until their young are able to look out for themselves; these are monogamous. The fifth is that of the rabbit. Each monogamous couple has its burrow into which it suffers no stranger to pass; they never leave each other; the male loves his young as much as he does his female, he carries them, polishes their skin, and teaches them to seek their food. The mother digs a burrow expressly for them.

One of the peculiarities of certain Rodentia is their prodigious fecundity. The number of their young is generally from three to five, sometimes one, and amounting often to as many as ten. The real cause of their fecundity is the frequency of their litters, which is noticeable, for instance, in mice and rats, and which occurs almost every month in certain voles, and seven times or more a year with the rabbit. They are all voluntarily polygamous and polyandrous, copulate a few days after parturition as is the case of the vole, if not immediately, as is the case of the mouse. Furthermore, the young are very soon capable of reproduction: the time being from one

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and one-half to two months in the vole or field-mouse. It has been calculated that one couple of the latter can give birth to five hundred individuals in a single year, and a couple of rabbits to the incredible number of one million in four years. The gigantic emigrations of the lemming from Norway and the pest which the invasion of our domestic rabbit visited upon Australia and California are proofs of this.

In marine mammals, the male rarely abandons the female after rut. Still, we meet with troops of old "solitary" males as they are called who have abandoned their progeny before the proper time, as we do also with special troops of adolescent young. Some are monogamous like the walrus and probably the dugong or halicore; the others are polygamous. In the latter, the father, the mothers, and the offspring remain together until the offspring are brought up, and in some, as it seems to me, even after the succeeding rut. The maternal and paternal sentiments in these polygamous families are not highly developed, the male occupying the position of a sultan of a harem who distributes his favors among many. These polygamous, or paternal families, having some social characters, we will consider more in detail in the chapter on "Animal Societies."

While on the subject of aquatic mammals I may mention the sea-otter (*Enhydris*) which is a transitional carnivore. The family intimately united and monogamous. It is composed of the father, the mother, the suckling infants, and the infants of the year preceding. The male caresses the female with his forepaws and plays with the infants. If their infants are taken away from them they weep and groan as do the seals. The mother carries her young in her mouth like the carnivora.

The Ungulata are not very fecund; as a rule they have but one offspring each year. The *Bos frontalis* has but one every two years, and the Aurochs one every three years. The musimon or wild sheep, the Capreolus or roe-buck, have two or three young, the pig three to nine. Some are plainly monogamous, like the reindeer, the gazelle, and according to Audubon and Bachman the buffalo; others are polygamous, particularly during rut, like the Alpine ibex

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and the musimon; others are polygamous to the very end, like the Solidungula and the elephant. The female has the direct charge of the young. When the male abandons her after rut, she frequently forms with other pregnant females a special group. When the moment for casting has arrived she modestly retires aside. Her little one follows her everywhere, she suckles it, leads it to pasture, shows the liveliest affection for it, and defends it with courage. When her spouse shares with her the care of her young she is extremely grateful for it, loves him, and proves her affection for him in a touching manner. In the Capreolus where the union is of a charming character from rut until the termination of the bringing up, the only interruption happens when the female retires for parturition. A few days after, she is seen to return happy and exultant, followed by her little one; she calls her spouse, who hurries near, abandons himself to joy, caresses his child and its mother and resumes the direction of the family.

But this spectacle is rare. Among the Ruminants the male is most frequently impelled by the sexual instinct alone or by this and the not less striking necessity of commanding, of being master. Conjugal love after rut and family love are luxuries with them. In the Solidungula, and I shall cite particularly the wild ass (*Asinus hemionus*), as soon as the male is capable of reproduction he has but one ambition, that of imitating his father, of gathering round him as many females as possible, and of making himself the head of a troop from which he jealously drives away all young males who are approaching puberty. In the Cervidæ, at times the male lives with the female only during rut, at times he prolongs his amours until the approach of parturition, and again he often remains with her until he has performed all his duties. Thus it is with the reindeer and with Capreolus. In the Capridæ and Ovidæ, the ardor of rut controls the situation and the polygamy is entirely sexual. In the antelopes, the gazelle is monogamous and assisted throughout by the male; the capricorn is polygamous; the chamois tarries with the female only during the time of rut, afterwards resuming his solitary life. In the Bovidæ the male prolongs slightly his stay with the female but afterwards departs to associate entirely with his com-

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panions, whilst the female and her young join the other females in the general herd.

Among the Pachyderms two examples will suffice. The wild boar or *Sus scrofa* lives with its females during the autumn rut, which lasts for some weeks or for two or three months, resuming afterwards its solitary habits. The female carries its young four and a half months about, and has a litter of from three to nine; she suckles them four and a half months and protects them for some time thereafter. Several litters will follow her at the same time and thus form a little society entirely maternal in character. The elephant is polygamous. He has on an average eight females, but there are reasons for believing that he is attached to one by a sort of preference for a certain period of time. The female is in gestation twenty-two and a half months, has but one offspring, and takes extraordinary care of it. The father is also attached to his offspring, but apparently after the manner of a chief of a polygamous band rather than as a father, which is the rule among the Ungulata.

The Carnivora are less fecund than the Rodentia, but more so than the Ungulata. They are monogamous in the sense that during the period of rut they associate with but one female, and that in the minority of cases where the union persists until the family phase, they have *a fortiori* but one. The mother is often excellent and devoted to her young, but sometimes leaves much to be desired. The wildcat, the puma, and the hyena, for example, quickly abandon their young in the presence of danger or upon the approach of man. The female ordinarily chooses among the males competing for her favor. The male generally abandons the female after rut or continues to live with her for a short time. In the latter case he hunts with her, or they hunt separately, each for itself, like selfish egoists. Some, like the tiger, occasionally run to the assistance of the female when she is defending her young. Among the few cases where family love exists must be classed the lion, the cat, the dingo, the fox, the wolf, and the ichneumon of the Nile. The wolf, however, voluntarily devours his offspring or abandons them in the event of the mother's death. The lion, who is extremely attached to the lioness during the sexual period and the

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simple conjugal period, is indifferent to his offspring when they are born. After a little, however, his heart is touched by their mewings, their gambols and caresses, and he becomes a model father. The harmony between the three constituent elements of the family is perfect.

The Monkeys, from whom we here exclude the anthropoids, are the highest of all the mammals in point of family. They are salacious and fickle in the period of rut, but in the end they make good husbands and good fathers. They never abandon their females after rut or before the birth of the young. They are polygamous like the Ungulata and the marine mammals, but despite their polygamy there is no trace, or at least there is but little trace of a need to pose as the head of a troop of females and offspring. Affection plays the highest rôle here. One only of the monkeys is monogamous, the Nyctipithecus and perhaps the Maki. The monkeys have but one offspring, or, by way of exception, twins.

Their maternal love is admirable. Personal witnesses have described traits which are profoundly touching,—of a mother in her last breath thinking of nothing but bringing her infant to a place of safety, imploring the mercy of the hunter with an expression perfectly human, or dying from grief at her loss. The female suckles her infant, carries it in her arms, upon her back, or wound round her body. It prepares its food, caresses and plays with it, gently corrects it, and shows much foresight for its welfare. Paternal love is not less developed. The two parents vie with each other in their attention to their little one, teach it to walk, climb, and to find its food. The father will run to the aid of his offspring in critical moments, and will extricate it from perilous positions. A male arctopithecus has been observed to take his infant from the arm of its mother and to carry it himself for a while. It is not known at what period the young are emancipated, but it is certain that parental affection and care are not limited to the first year, or, in other words, that the family is composed of infants of various ages.

In the Anthropoids the conjugal and family sentiments are the same. All interest centres in ascertaining whether they also are

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polygamous or monogamous, and what is the duration of their union.

I can give no opinion regarding the Gibbon (*Hylobates*). Duvancel's account of having seen mothers go to the river bank to wash the faces of their infants in spite of the latters' resistance, proves that maternity here comprehends its rôle. The orang-outang (Simia) affords a peculiarity which is frequent in mammals and which we shall speak of later,—namely, a family disposition different in the adult and in aged males. The old males are reported to abandon their females after rut. The adults, on the contrary, live with her and prolong their union for an unknown time. The family of the orang-outang is composed as follows: of a male, a female, and several young of widely varying ages amounting sometimes, as it has seemed to me, to as many as four litters. The Anthropoids, as we know, have but one offspring. As to the care devoted to this offspring the details are lacking. But when we see in our menageries the passion which the orang-outang has for infants of all kinds, and even for dolls, the delicacy with which they lift them into their arms and caress them, there can be little doubt that they are the same in the savage state. When the time for accouchement comes, the female withdraws. On the gorilla I possess unpublished data, in addition to those already known. The cases reported by negroes of gorillas having been seen with several females do not convince me. For me he is monogamous; he retains the same female in all likelihood indefinitely. He has been seen with one, two, and as many as three offspring at least, of different ages, whom he watches and defends. The chimpanzee is also most likely monogamous. In the case of Savage the family comprised a male, a female, and two infants of different ages. The following passage from Livingstone leaves no doubt concerning one of the species, the Soko: "He lives in society: some ten males together, each having its female. . . . If one seeks to possess himself of the female of another, he is knocked down and beaten by all the other males. . . . When a difficult spot has to be crossed, the father takes the infant in his arms, carries it over, and hands it to its mother."

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To sum up, the Mammals, taken as a whole, are disappointing. They offer but rarely that almost ideal spectacle which so often captivates us in birds. Among the lower mammals maternal love has made a great step in advance of the reptiles, the maternal family having been constituted. But the male has remained at the same point; he abandons the female after rut. In the Rodentia progress is restricted to a few who experience the joys of paternal-maternal family life.

Among the Carnivora and Ungulata, to which we must add the marine mammals, matters tend in two opposite directions. In the Carnivora the paternal-maternal family exists; the father takes his share in the care of the young; the sentiment which binds him to his consort has not the purity which is offered us in birds, but is sufficient and accomplishes its end. The lion is the most advanced example of this type, father, mother, and offspring having for one another the tenderest affection.

In the Ungulata and marine mammals the family is paternal-maternal, but with an entirely different character; what was the rare exception has become the rule. Some are polygamous during rut only, as are many birds; but the majority are polygamous during the two other periods. In the last case, however, the spring of action is falsified. It is not a transformation of sexual love into conjugal love and alternately into paternal love which moves the father, but vanity, the desire of being surrounded by underlings, of possessing a troop over which he can exercise unrestricted authority. The number of females, which is at times excessive, and of the young which result from his many unions, proportionately weaken his altruistic tendencies. Some lose here the notion of personal responsibilty and suffer it to be merged in a collective responsibility of the herd. In short, among the Ungulata, the female is what we have seen her to be among the birds, submissive in the first period, an excellent mother, devoted, and courageous in the third, her ardor to fulfil her tasks growing with the more or less complete abandonment of her male. The male on his part experiences the same agitation in rut, offers the same combats to his rivals, but subsequently deports himself differently. At times he deserts his

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females with indifference, at times he keeps them by him to lord it over them, at times he restricts his activity to protecting them from afar as an integral member of the herd, and again and by way of exception he still associates with his family, as is the case with the monogamous reindeer and the almost monogamous Capreolus.

The Monkeys seem to be descended from the Ungulata with regard to family, but they have a less marked sentiment of domination, and on the other hand exhibit a decidedly pronounced conjugal and family sentiment. They never abandon their females; they are all good husbands and fathers. The anthropoids differ from these only in the respect that they are monogamous.

It is on the female, in fine, that adaptation has concentrated all its efforts. The maternal family is a necessity, the paternal-maternal family a luxury. Outside of the hours which he devotes to reproduction, the male has always time for living and enjoying his individual life. As to the female, she has among the birds no leisure except in winter, and none at all among the majority of the higher mammals where rut, gestation, and bringing up succeed one another rapidly and without interruption. From the moment she is capable of reproduction the object of her life is one thing—love. She seeks to please her nearest spouse, she loves him and admires him. She loves the eggs on which she broods and the offspring which are born of them; she loves him who has made her a mother and who shares with her her affection for her offspring. What a difference between her and the male, particularly among the mammals! From the beginning it is pleasure which he seeks, frequently without any ulterior motive; later it is satisfaction of his activity, the need of possessing and of dominating. The male is the egoistic element in the association, the female is the altruistic element. If to employ a word which has been much abused, the male is superior to the female in all that touches the functions of outward life, the female is superior to him in all that concerns reproduction. United they form a complete whole—the physiological unit. All this is realised in the monogamous form of the family.

The polygamous form is a contrary deviation of the physiological law. If we regard the male simply as a fecundator, whilst the

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female is conceived merely as a layer or bearer, it is admissible that the male should wander from female to female and fecundate as many as possible. But physiology is not of this mind. It shows that it is less important to procreate enormous quantities of young, who will necessarily be exposed to wholesale destruction from lack of care, than to assure the existence and prosperity of a small number. It shows that in the struggle against the causes of mortality the advantage is with those who with the assistance of two parents only, have exhibited the greatest powers of resistance. According as we rise in the scale of vertebrates the fecundity diminishes; the number of eggs or of young which was so large among the fishes is diminished among the reptiles, the birds, and the mammals. But the common care devoted to the progeny is also proportionately augmented. There is no doubt, even leaving man aside, that the male is devoted to his female and to his young in the inverse ratio of their number. To reduce the male to a simple fecundator, a sultan of a harem, a chief of a herd, is to misrepresent the requirements of bringing up and of education. Polygamy runs counter to the end to be obtained. Equality of number between the sexes in the various species is proof that the unions should be made by pairs and not by pluralities.

A physiological difference will explain perhaps this resistance of the mammalian male to the development of the conjugal and family sentiments as compared with birds. In the latter the total time required for hatching is short; the interval which elapses between the termination of rut and the birth of the young is not long enough for the male to contract new habits with his comrades; the love which he cherished for the female continues during brooding and is readily transferred from her to the infants. In the higher mammals, on the other hand, the time between rut and the end of the bringing up is long; the period of gestation, which varies from several months to twenty-two in the elephant, gives rise to a long gap between the love of rut and the birth of the offspring. During this time the male grows unaccustomed to the female and seeks out his old friends. It is true that there is but one litter a year, and that the return of rut, having no relation to the natural termination

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of the bringing up of the young, does not put an unseasonable end to the family as is the case with birds.

We have mentioned a dark point in the case of birds—the extremely rapid separation of the offspring and the parents and their subsequent mutual forgetfulness for one another. Is it the same with the mammals? We have cited among birds the case of the water-hen, where two broods of one season fraternise with one another, with the result that the mother is at the head of a considerable flock. The mammals frequently present analogous cases. In the Virginia opossum, says Audubon, there are three litters and more a year. The young of one may still be seen in the abdominal pouch, whilst those of the two others are found running about under the watchful eye of the mother. In the squirrel, the three to seven young of the two annual litters form a troop of from twelve to fifteen following their mother. In Enhydris the family goes about, formed of a father, a mother, and of the suckling young and the semi-adults. In the wild boar the mother moves about with the young of different years. In the orang-outang and the gorilla the mother and father have been met accompanied by young of widely different ages. There is no doubt that in mammals the family shows more tendency to be prolonged than among birds. In the case of the marmot the young pass the whole winter in the same burrow with their parents. Take also the case of the roe-buck (*Capreolus*). Rut takes place in April or in May, gestation lasts from eight to nine months, and the suckling young are three months old when the second rut takes place. These still remain six months with their mother and do not leave her until the birth of another offspring. In the roe-buck, says M. Trouessart, brothers and sisters have been seen to copulate and to remain together throughout their whole life. There are reasons drawn from the social state, to be learned later on, which lead us to believe that between the moment when the young are emancipated, particularly from their mother, and that at which they reach puberty, the bond is less broken than among birds. But what is certain is that in both the first rut breaks definitely this bond, and that among mammals as among birds no

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trace of affection survives between parents and young. They no longer recognise one another.

Conclusions. The family, in the vertebrates, is nothing but one of the phases of the reproduction of the species—its outward terminal phase. It solves for animals the problem of the development of individuals during the interval which separates the rupture of the egg from the moment where, being able to take care of themselves, they have only to reach puberty.

Bi-sexual generation, outlined in the highest protozoans, has been pronounced by the accidents of evolution to be the form most favorable to the reproduction of constituted types, that is to say, of species. Instead of leaving the sexes united in one and the same solidarised colonial individual, adaptation obeying the law of specialisation of functions has separated them and lodged them in different individuals. A difficult situation resulted,—that of two individuals having the same rights to the proprietorship of the resultant offspring, and the same physiological obligation of caring for their development. In some invertebrates the question is simplified: the male dies when he has fulfilled his indispensable rôle. In this uncertain epoch in the history of successive creations, where the fishes and the reptiles are born and differentiated, there are traces of hesitation. The hatched eggs perish for want of care in large quantities. Here was the opportunity for selection. The egg having been laid and fecundated, or fecundated and laid, who should assume charge of its outward development—the male or the female? In the birds and the mammals, the solution has been reached,—it is the female. Organic and psychical impulses have been created in her as the result of the law of utility: the best survive, the poorest perish. But seeing that the male does not disappear after having fulfilled his necessary rôle, why is not some use made of him? Analogous impulses to those formed in a female, prompting him to share with her the family burden, are then produced. But we have seen that adaptation has not attained absolutely identical results in the birds and the mammals. In the majority of the former, the male, prompted by a high sensibility, has become an excellent *pater familias.* In the majority of the latter,

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adaptation has gone afield; the sensibility of the animal has labored under disadvantages; the egoistic impulse has gained the upper hand over the altruistic impulse. And this stands to reason. The female, passive by nature, has uniformly yielded to sensibility from her earliest origin in the protozoan cells; the male who has been active since the same period has been confirmed in his consciousness of will and of initiative. He has retained the active rôle in rut. He has also remained active in the majority of mammals in the sense of seeking to possess and to have around him as many females as possible. While from a different aspect of the same egoism the Carnivora have become monogamous, the majority of the Ungulata, of the marine animals, and of the monkeys have become polygamous. The goal is thus missing here towards which adaptation has so successfully proceeded in birds. The conjugal union, instead of being an altruistic association having in view reproduction, is the supremacy of the male over one or several females. The family, instead of being confined to one female and to a reasonable number of young which could be reared and protected, is a clan of which the male is the chief. Polygamy in the Ungulata is a digression of adaptation. If it still persists in the Monkeys, it is because it has not been able to regain the straight path. In the anthropoids, it is true, the scene is changed, and these animals have again become monogamous.

It remains for us to see what influence the various groups connected with the family and also the family itself have exercised on the formation of animal societies,—a study which will carry us to the last chapter of this part.

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THE PROBLEM OF GOOD AND EVIL.

THE ERA OF SUBJECTIVISM.

BY far the most important problem for philosophical, religious, and moral consideration is the question as to the nature of evil. The intrinsic presence of suffering is the most obvious feature that determines the character of existence throughout, but gives at the same time origin to the most important blessings that make life worth living. It is pain that sets thoughts to thinking: a state of undisturbed happiness would make reflexion, inquiry, and invention redundant. It is death which begets the aspiration of preserving oneself beyond the grave. Without death there would be no religion. And it is sin that makes virtue a necessity. If there were no going astray, there would be no seeking for the right path; there would be no merit in goodness. Blame and praise would have no sense. In the absence of want, imperfection, and all kinds of ill, there would be no ideal, no progress, no evolution to higher goals.

Mythology being always a popular metaphysics, it is a matter of course that the idea of evil has been personified among all nations. There is no religion in the world but has its evil spirit who represents pain, misery, and destruction. Buddhists call the personification of evil Mâra, the tempter, the father of lust and sin, and the bringer of death. The Persians call him Angra Mainyu or Ahriman, the demon of darkness and of mischief, the Jews call him Satan the fiend, the early Christians, Devil (διάβολος), i. e., slanderer, because, as in the story of Job, he accuses man, and his accusations are false. The old Teutons and Norsemen called him Loki. The

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demonologies of the Japanese and Chinese are perhaps more extensive than our own.

The evolution of the idea of evil as a personification is one of the most fascinating chapters in history and it would be humorous if most of its pages (especially those on witch prosecution) were not at the same time very sad. The pedigree of the Evil One is older than the oldest European aristocracies and royal families; it antedates the Bible and is more ancient than the pyramids. We have treated chapters of it in outline in another place[1] and shall not attempt to recapitulate them, but limit ourselves to the philosophical consideration of the idea of evil; and here we are first of all confronted with the problem of the objective existence of evil.

The question presents itself: "Is not evil the product of mere illusion? Is it not a relative term which ought to be dropped as a one-sided conception of things? Does it not exist simply because we view life from our own subjective standpoint, and must it not disappear as soon as we learn to comprehend the world in its objective reality?" The tendency to regard evil as a purely negative term is at present very prevalent, for it agrees with the spirit of the times and is one of the most popular notions of to-day.

In ancient times man was in the habit of objectifying the various aspirations and impulses of his soul. In order to understand beauty the Greek mind fashioned the ideal of Aphrodite, and the moral authority of righteousness appeared to the Jew as Javeh the Lord, the Legislator of Mount Sinai. Religious aspirations were actualised in the Church by means of ceremonials and ecclesiastical institutions.

Things changed at the opening of that era in the evolution of mankind (commonly called modern history) which was prepared through the inventions of gunpowder, the compass, and printing, and began at the end of the fifteenth century with the discovery of America, and the Reformation. The more the horizon of the known world grew, the more man began to comprehend the importance of his own subjectivity. The tendency of philosophy since Descartes

[1] See *The Open Court*, Nos. 421, 422, 424, 426–428, 430, 449, 450–453, 456–460.

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and of religion since Luther, has been to concentrate everything in man's individual consciousness. That alone should have value which had become part of man's soul. Man's consciousness became his world, and thus, in religion, conscience began to be regarded as the ultimate basis of conduct. Men felt that religion should not be an external, but an internal factor. Toleration became a universal requirement, and subjectivity was made the cornerstone of public and private life. Thus the era of the Reformation showed itself as a revolutionary movement which, proclaiming the right of individualism and subjectivity, overthrew the traditional authority of an external objectivity.

The originators of this movement did not intend to discard all objective authority, but the spirit of nominalism which dominated them prevailed over their movement in its further progress. The last consequences of the principle of subjectivity which starts with the famous assumption *cogito ergo sum* were not anticipated by Descartes, for he naïvely assumes objective existence on one of the most trivial arguments. Nor would Luther with his peculiar education and stubborn narrowness which were by no means inconsistent accompaniments of his greatness, ever have endorsed later theories based upon the purely subjective aspect of conscience; but the fact remains that the last consequence of the recognition of the supremacy of the subjective principle is a denial of any objective authority in philosophy, politics, religion, and ethics, which leads in politics to anarchism, i. e., individualism pushed to its extreme; in philosophy to agnosticism, i. e., the denial of any cognisable objectivity worked out most systematically in Kant's critical idealism. In ethics it is the refusal to recognise any objective authority in morals; which leads either to Bentham's ethical egotism and hedonism or to intuitionism.

Our present civilisation is based upon the Protestant ideal of individualism, and nobody who lives and moves in our time can be blind to the enormous benefits which we derive from it. Nevertheless, we must beware of the onesidedness of subjectivism. Objectivism is not so utterly erroneous in principle as it appears from the point of view of modern subjectivism. The external methods of

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the Roman Church are mistaken; the tyranny of its hierarchical system which substitutes the priest's authority and an infallible papacy for God's authority is radically wrong; and the main task of Protestantism consisted in protesting against this authority, which, in spite of its self-asserted catholicity, is based upon human authority of fallible mortals, an authority that was more frequently misused through bigotry and ignorance than from malice and selfishness.

There are Protestants who might object that Protestantism is not merely negative; it is also positive. It is not only a protest, but also an affirmation. True, indeed! But most of the Protestant affirmations are simply relics of the old Romanism which bound the consciences of man and crippled his reasoning power. The fanatics among the Protestants are by no means friends of liberty and free inquiry; and the positive power, the new factor in history that was destined to build up a new civilisation, was nothing else but science. Therefore, Protestantism is not as yet the last word spoken in the religious development of mankind. We must look to higher aims and more positive issues, and a new reformation of the Church will obtain them only on the condition of its again recognising the importance of objectivity.

Mankind will not return to the dogmatic system of hierarchical institutions, which would only bind again the consciences of men by man-made authority, but the fact must be recognised that truth is not a mere subjective conception; that truth is a statement of facts; accordingly, that it contains an objective element, and that this objective element is the essential part of recognised truth.

In the old period of objectivism, the ultimate authority rested with great men, prophets, reformers, and priests, whose spirit, after it had been adapted to the needs of the powerful, was embodied in Church institutions. The new objectivism discards all human authority; it rests ultimately upon science, which is an appeal to facts. Truth is no longer what the Church teaches, or some infallible man may deem wise to proclaim, nor is it what appears to me as true, or to you as true; but that which according to methodical critique is proved to be objectively true, so that everybody who investigates will find it so.

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Objective truth, demonstrable by evidence and capable of revision, or, in a word, science, is the highest, the most reliable and the most valuable revelation of God. God reveals himself in the facts of life, among which we include our afflictions and personal experiences, God speaks in our conscience, which is, as it were, the moral instinct, the result of all our inherited and acquired experiences, and this is the reason why the voice of conscience makes itself heard in our soul with that automatic force which is characteristic of all deep-seated subconscious reactions. God also appears in our sentiments, our ideal aspirations, our devotions, our hopes and our yearnings. All these various manifestations are important and must not be lost sight of, but above them all is the objectivity of truth which speaks through science.

It is impossible for all men to be scientists, but for that reason it is not necessary to enslave their minds and hearts by blind faith. The faith of every man should be the trust in truth, not in fairy tales that must be taken for granted, but in the truth,—the truth which in its main outlines is simple enough to be comprehensible by all,—the truth that this world of ours is a cosmic harmony in which no wrong can be done without producing evil effects all around.

Faith in the objective authority of truth is the next step in the religious evolution of mankind. We stand now at the threshold of the third period which will be, to characterise it in a word, an era of scientific objectivism. The tendency of the second era was negative, revolutionising, theorising; the tendency of the third will be positive, constructive, practical.

Negativism and subjectivism appear from the standpoint of the positivism and objectivism of the first period as the work of the destroyer, of the negative spirit, the Devil. It is a reaction. This explains why Milton's Satan actually became a hero. Milton was a Protestant, a revolutionist, a subjectivist, and he unconsciously sympathises with Satan, who in the terms of a philosopher of the age declares:

> "The mind is its own place and in itself
> Can make a heaven of hell, a hell of heaven.

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What matter where, if *I* be still the same
And what I should be."

The negativism of the second period is not a mistake. It was an indispensable condition of the third period; for it manufactured the tools for a higher and better positivism,—criticism. But criticism is insufficient for positive construction; we must have actual results, methodical work, and positive issues; and the prophet of the twentieth century finds it necessary again to emphasise the importance of objectivity.

IS EVIL POSITIVE?

After these preliminary remarks we shall be prepared to understand why the tendency of subjectivism led to the proposition that evil is a mere negation, but no positive factor. And looking for the most characteristic representative of this view among the ablest authors of our time, we find a statement written by the well-known author of the novel *Ground Arms!* Bertha von Suttner, one of the most prominent advocates of universal peace on earth. She knows as well as Schopenhauer that the ills of life are positive, for she describes all the horrors of war in their drastic reality. Nevertheless, Bertha von Suttner devotes in her ingenious book *The Inventory of a Soul* a whole chapter to the proposition "The Principle of Evil a Phantom."[1] She says:

"I do not believe in the phantoms of badness, misery, and death. They are mere shadows, zeros, nothingnesses. They are negations of real things, but not real things themselves . . . There is light, but there is no darkness: darkness is only the non-existence of light. There is life, death is only a local ceasing of life-phenomena . . . We grant that Ormuzd and Ahriman, God and Devil, are at least thinkable, but there are other opposites in which it is apparant that one is the non-existence of the other. For instance: noise and silence. Think of a silence so powerful as to suppress a noise . . . Darkness has no degree, while light has. There is more light or less light, but various shades of darkness can mean only little or less light. Thus, life is a magnitude, but death is a zero. Something and nothing cannot be in struggle with each other. Nothing is without arms, nothing as an independent idea is only an abortion of human weaknesses . . . two are necessary to

[1] *Inventarium einer Seele*, Chap. XV.

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produce struggle. If I am in the room, I am here; if I leave it, I am no longer here. There can be no quarrel between my ego-present and ego-absent."

This is the most ingenious and completest denial of the existence of evil, and it is presented with great force. It is the expression of the negativism of philosophy from Descartes to Spencer. It seems to be consistent monism. And yet, we cannot accept it.

True enough, the idea of a personal Devil is as imaginary as a fairy, or an elf, or a hobgoblin; true also that there is no evil in itself, and no goodness in itself; the dualism of the Manichees is untenable. The evil principle cannot be conceived as an independent substance, essence, or entity. But for that reason we cannot shut our eyes to its real and positive existence. Granted that silence is the absence of noise; yet noise is not goodness, neither is silence badness. While I think or write, noise is to me an evil, while silence is bliss. Silence, where a word of cheer is expected or needed, may be a very positive evil, and a lie is not merely an absence of truth. The absence of food is a mere negation, but considered in the relation to its surroundings as an empty stomach, it is hunger; and hunger is a positive factor in this world of ours. Sickness can be considered as a mere absence of health, but sickness is caused either by a disorder in the system or the presence of injurious influences, both of which are unquestionably positive. A debt is a negative factor in the books of the debtor, but what is negative to the debtor is positive to the creditor.

If negative ideas were "mere abortions of human weakness," as Bertha von Suttner claims, how can mathematicians have any use for the minus sign? And if the idea of evil were an empty superstition, how could its influence upon mankind have been so lasting? On the one hand it is true that all existence is positive, but on the other hand we ought to know that existence in the abstract is neither good nor bad; goodness and badness depend upon the relations among the various existent things. And these relations may be good as well as evil. Some existences destroy other existences. Certain bacilli are destructive of human life, certain antidotes destroy bacilli. There are everywhere parasites living upon other lives, and what is positive or life-sustaining to the one is nega-

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tive and destructive to the other, and every such negation is a reality, the effectiveness of which neutralises the action of another reality.

The idea of goodness is by no means equivalent with existence, and badness with non-existence. Existence is the reality; it is the indivisible whole, the one and all. Good and evil, however, are views taken from a certain given standpoint, and from this standpoint good and evil are features forming a contrast, but as such they are always actualities; neither the one nor the other is a mere nothing. The question is only whether *we* have a right to regard *our own* standpoint as the positive one representing that which is good, and all the powers that hinder human life as negative or evil.

The answer to this question seems to be that any and every being will naturally regard its own standpoint as the positively given fact, and every factor that destroys it as negative; his pleasure appears to him the standard of goodness.

And we grant that every being is entitled to take this standpoint, and that subjectivism naturally forms the initial stage of all ethical valuation. But we cannot rest satisfied with the principle of subjective autonomy as a solution of the problem of good and evil.

Supposing that good were indeed simply that which gives pleasure or enhances *my* life, and bad that which gives pain or threatens to destroy it, the standard of goodness and badness would be purely subjective. The famous savage-chief quoted by Tylor, and from Tylor by Spencer, would have fathomed the problem of good and evil when he declared that "bad is if anybody took away his wife, but if he took away the wife of some one else, that would be good." Good would be that which pleases *me*; and *the* good as an objective reality would not exist. There would be something good for me, for you, and for many others, but what might be good for me might be bad for you. Goodness and badness would be purely subjective qualities without any objective value.

The view which bases ethics upon a consideration of pleasure and pain and defines goodness as that which affords the greatest amount of pleasurable feelings is called hedonism. The coarsest

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form of hedonism (as represented by Bentham) makes the pleasure of the individual supreme; it bases its ethics upon selfishness, and sees in altruism only refined egotism. The altruist is said to love but himself in others.

Let me add here that the intuitionalist basing ethics upon the voice of his conscience is, closely considered, also a hedonist, or at least a subjectivist, for he finds the ultimate authority of conduct in himself, viz., in the pleasure of those motor ideas of his which he calls his conscience: what he is pleased to consider as ethical, he thinks is ethical. His standard of morality is the subjectivity of his conviction which he is unable either to analyse or to trace to its origin. He differs from Bentham's hedonism of ethical egotism only in this, that the pleasure of his conscience overrules the lower pleasures of the senses.

Modern utilitarianism, as represented by Mr. Spencer, remains a purely subjective ethics, for it makes the greatest happiness of the greatest number, the maxim of ethics; and by doing so it introduces no objective principle, but it simply proposes to replace every single subjectivity by the sum total of all subjectivities; and subjective ethical maxims are not as yet truly ethical; they remain on the level of the world-conception of Tylor's savage.

All subjective ethical theories fail to see the cardinal point of ethics, for the very nature of ethics is objective. If there is no objective authority of moral conduct, we had better openly declare that ethics is an illusion and what we call ethics is simply an arithmetical calculation in which pleasures and pains are weighed against one another and morality is at best only a dietetics of the soul. As a matter of fact, however, he who opens his eyes will see that there is an objective authority of conduct in life. Life and the factors in life are not purely what we make them. Here we are to run a race and the course of the individual as much as that of mankind and all living beings is prescribed in a very definite and unmistakable way on the lines of what since Darwin we have accustomed ourselves to call evolution. We must learn to recognise the necessity of progress which leads us onward on a straight and narrow path. Those who willingly obey the laws of progress advance on the path in

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spite of its thorns, joyously and gladly. The reluctant are urged forward and feel the smart of nature's whip, while he who obstinately refuses to mind the laws of the cosmic order goes to the wall.

Nature has no consideration for our sentiments, be they pleasures or pains. Happy is he who delights in acting according to her laws. But he who seeks other pleasures is doomed. Look at the situation from whatever standpoint you may, the criterion of right or wrong, of good or bad, of true and false, lies not in the greater or lesser amount of pleasure and pain, but in the agreement of our actions with the cosmic order, and morality is that which is in concord with the law of evolution. Ethics teaches us to do voluntarily what after all we must do whether or not it may please us.

In a word, ethics is unthinkable without duty, and the essential element of duty is its objective reality, its inflexible sternness, and its austere authority.

We say to the hedonist, a good action is not moral because it gives pleasure, but because it accords with duty; and we must not look out for that which gives us pleasure but we must endeavor to find our highest pleasure in doing that which the cosmic law (or, religiously speaking, God) demands of us.

Those who deny that there is any objective norm of right and wrong in the universe, are inclined to claim with Huxley, that man survived not on account of his morality, but on the contrary, on account of his immorality. It has been said that man is more rapacious, more egotistical, more immoral than brutes. Without denying that an immoral man may sometimes appear more brutish than a brute, we cannot see that man is as immoral as or even more immoral than brutes. But the case is worth considering.

Says the wolf in Æsop's fable: "Why is it right for you to eat the lamb, when for me it is supposed to be wrong?" Is not man in the same predicament as the wolf, and does not mankind slaughter more animals than all the wolves in the world ever ate?

Granted that the wolf's pleadings are substantiated, we observe that man lives, but wolves are exterminated, which seems good evidence in favor of man being in greater accord with the cosmic laws. And yet the actions of both, the wolf and the man, seem to

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be identical; or rather, if the blackness of a crime depended upon quantitative measurement by addition, we should have to decide in favor of the wolves; for man at the present time kills more sheep, pigs, and other animals in one year than wolves could devour in a century. What is the justification of slaughter in the one case, and what its condemnation in the other?

In answering this question we shall not idealise man's mode of living on the meat of his fellow creatures. For it appears that from a moral standpoint it would be preferable to sustain life without slaughtering lambs and calves, fowl and fishes. The case must not be considered from an abstract or ideal standpoint, but simply treated as a comparison of the wolf's conduct with man's conduct; and we find that the more sheep a man eats, the more he raises. The wolf eats them without raising them. The wolf murders the lamb. However, the slaughter of the lamb by man is no murder, for it serves to increase and to sustain human souls, and the souls of man possess more truth and a higher insight into nature. The lamb dies as a sacrifice on the altar of humanity, and this sacrifice is right and good if, and in so far as, it substitutes higher life for lower life. Subjectively considered the wolf has the same right as man to kill a lamb; and also the same right as the lamb would have to kill wolves or men. The difference of man's and the wolf's actions appears only when we take into consideration the objective conditions of man's superiority, giving him a wider dominion of power which he can maintain because his soul is a better reflector of truth than are the notions of a wolf.

We must insist here that the attainment of higher life, consisting in a fuller comprehension of truth and a greater acquisition of power, is one of the most essential requisites of morality. Morality is not a negative quality, but a very positive endeavor. We must abandon the old standpoint of negativism that goodness consists in not doing certain things which are forbidden. Genuine goodness consists in daring and doing; and in doing the right thing. One genuine and positive virtue atones for many sins that consist in mere omissions. The sheep is by no means (as is frequently claimed) more moral than the wolf. The wolf is bad enough, but he is at

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least courageous and keen; the sheep is a coward, and with all its cowardice it is stupid. It is time to discard the ovine ideal of morality which praises all lack of energy and of accomplishments as the highest type of goodness. What we need is a positive conception of virtue based upon a careful consideration of the requirements of life.

What higher life and lower life is cannot be declared to be an arbitrary distinction. It is not purely subjective, but can be defined according to an objective standard. Good to the savage is that which pleases him, and bad that which hurts him. Good, to him who has deciphered the religious mystery of the universe and understands the nature of God, is that which produces higher life, and bad is that which hinders, or perverts, or destroys it.

III. THE GOD-IDEA.

God is a religious term and it is often claimed that knowledge of God does not fall within the domain of science, the idea of God and all other religious terms are claimed to be extra-scientific. Thus there are two parties both of which are under the influence of nominalistic subjectivism: religious agnostics and infidel agnostics. The belief of the former is as irrational as the disbelief of the latter. If there is an objective authority of conduct, we must be able to know it; we can obey it only in so far as we know it. Now experience teaches us that there is an authority of conduct, and the theory of evolution promises to prove it by positive evidence. This authority of conduct is called in the language of religion "God." Our scientists formulate under the name "laws of nature" that which is immutable in the various phenomena, that which is universal in the variety of happenings, that which is eternal in the transient, and every law of nature is in its sphere a rigorous authority of conduct which in this sense is a part and parcel of God's being.

The most important laws of nature in the ethical domain are those which regulate all the various and sometimes very delicate relations of man to man, which intercatenate our fates and set soul to soul in a mutually helpful responsion.

Existence is one harmonious entirety; there is not a thing in

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the world but is embraced in the whole as a part of the whole. The One and All is the condition of every creature's being; it is the breath of our breath, the sentiency of our feelings, the strength of our strength. Nothing exists of itself or to itself. All things are interrelated; and as all masses are held together by their gravity in a mutual attraction, so there is at the bottom of all sentiment a mysterious longing, a yearning for the fulness of the whole, a panpathy which finds a powerful utterance in the psalms of all the religions on earth. No creature is an isolated being, for the whole of existence affects the smallest of its parts; and in this sense the scriptural saying "God is Love" is a truth demonstrable by natural science.

Science proves that the whole of existence presents itself throughout as regulated by law; that it is not a chaos, not an incomprehensible riddle, but a cosmos. As a cosmos it is intelligible, and sentient creatures can learn to understand its nature and adapt themselves to it. God is that feature in the world which conditions and produces reason; and reason is nothing but a reflexion of the world-order. The cosmic order of existence, the harmony of its laws, its systematic regularity makes intelligence possible, and sentient beings will naturally develop into minds. God is that which changes individuals into persons, for reason and a rational will are the essential characteristic of personality.

Taking this ground we say (adopting here, for the sake of simplicity, the religious term God: those beings are good which are images of God.

The nature of progress is not (as Mr. Spencer has it) an increase of heterogeneity, but growth of soul. Evolution is not mere adaptation to surroundings, but a more and more perfect incarnation of truth. Adaptation to surroundings is, in an ethical point of view, an incidental blessing only of the power afforded by right conduct.[1]

All facts of experience are revelations, but those facts which

[1] Cf. *Homilies of Science*, "The Test of Progress," p. 36, and "The Ethics of Evolution," p. 41.

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teach us morality (man's conduct to his fellow-beings) embody truths of special importance. They exercise a wholesome influence upon the development of our souls, even though the primitive man was not able to fully understand the why and wherefore. In the lack of a clear comprehension of facts themselves, man's imagination clothes them in the garb of mythological imagery. In our own days the great teachers of morality are still regarded as the Indian regards the medicine-man, and the sacraments of the Church are treated like the totems of savages. Religion is now slowly passing out of the old stage of magic into the higher stage of a direct comprehension of facts. Myth changes into knowledge, and the allegory of the parable begins to be understood.

As astrology changed into astronomy, so the religion of miracles will give way to the religion of science.

We often hear God spoken of as good, and he is sometimes represented as goodness in general. But God is more than goodness. God is the objective reality of existence regarded as the ultimate authority of conduct. God is thus the standard of goodness; to call God good is an anthropomorphism. His creatures are more or less good, according as they are more or less faithful portraits of him, and as they obey his will. God is neither good nor bad, neither moral nor immoral, he is unmoral; yet, his nature and character is the ultimate criterion of goodness and of morality. And God's will can be learned from his revelations, which in the terms of science are called experiences, and which we formulate with exactness in what is called "the laws of nature."

God is not existence itself; He is not, either singly or collectively, the facts of the world; He is not the sum-total of objects or existences. God is that omnipresent feature in the facts, in the objects of the world, in reality, which commands obedience; God's will appears as that something in experience to which we have to conform. In a word, God is the standard of morality and the ultimate authority of conduct. This is entheism, but not pantheism, for it recognises the distinction between God and the All or sum-total of existence. It is monotheism, but not the old monotheism, for it no longer looks upon God as one individual ego being. Yet it pre-

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serves the nucleus of the oldest conception of God, and accepts at the same time all that is true in pantheism.[1]

God was always an idea of moral import. God was and will remain (so long as the word is retained) the ultimate authority of conduct. Since the order of the world in its most general features is of intrinsic necessity, which means that under no conditions could it be imagined otherwise, God is the *raison d'être* not only of the world as it actually exists but of any possible world; and in this sense entheism teaches that God is supernatural. Supernaturalism may be untenable as it was understood by dogmatists, yet there is a truth in supernaturalism which will remain true forever.

Those who see in the facts of nature only matter in motion, will naturally be surprised at the fact that a cosmos with living and morally aspiring beings can develop out of it. A deeper insight into the conditions of nature reveals to us that the world is a well regulated cosmos, having its own definite and immutable laws, and these laws are realities as much as material things. They are not concrete entities, but they are real, nevertheless, and indeed of greater importance than the existence of sense-perceptible objects. The cosmos is not only an enormous mass of innumerable atoms, and molecules, and masses of suns and stars, but its finer texture shows that down into its most delicate details it is a wonderful systematic whole, full of life and consistency, and possessing an outspoken and clearly intelligible character. The world possesses objectivity, i. e., it is a reality independent of what we think it to be. The world is not as we think it to be, but we must think the world as it is, and our duty is to act accordingly.

These are the plain facts of science which even the man who has no idea of science must mind. Only those creatures can in the long run of evolution survive who act according to the truth. Thus,

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[1] *Entheism* is the doctrine that God is omnipresent *in* the world. *Pantheism* identifies God and the All. *Nomotheism* teaches that the laws of nature are not laws given by God as a lawgiver may issue ordinances, but that they are manifestations of God and as such parts of the Deity. *Monotheism* is the theory that there is one God, and monotheism is commonly understood to mean that this one God is a personal being.

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the truth became embodied in moral rules, even before science could deduce or explain them. Religion is a revelation in so far as it is an anticipation of certain truths which were at the time of their invention still uncomprehended. Religious ideas, accordingly, had to be symbols, and could be communicated only in parables. Now, the more science progresses, the better shall we learn to understand the meaning of these parables.

God is in all things, but he is best revealed in man—especially in the morally aspiring man, and this is the meaning of the ideal of a God-man, or Christ,—a Saviour whose teachings are the way, the truth, and the life.

Jesus of Nazareth was, according to the latest and most searching historical investigations, a real historical person and not a mere myth of religious poetry, however much he was decked out with the same mythological tinsel ornaments with which all the greatest teachers of mankind, such as Zoroaster and Buddha, have been over-loaded. Yet, whether or not Jesus was a historical person is of little consequence; for the question is not whether Jesus of Nazareth lived 2,000 years ago, but whether Christ, the ideal of the God-man, the impetus of moral aspirations, is a living presence now. There are Christians whose Christianity is a mere Jesuism. Christians should distinguish between Jesus and Christ. Jesus taught the way, the truth, and the life, as he understood it; but Christ *is* the way, the truth, and the life; he is the ideal of goodness, of moral aspirations, of charity and love, as it finds its incarnation in man. He who believes in Jesus of Nazareth is not as yet free from paganism. He has the religion of the medicine-man, which is a belief in the magic power of Christian totems. He only who believes in Christ and lives like Christ has embraced Christianity,—the ideal Christianity that is free from pagan ingredients.

IV. THE EVIL ONE.

Evil personified appears at first sight repulsive. But the more we study the personality of the Devil, the more fascinating it becomes. The Evil One is in the beginning of his existence the em-

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bodiment of everything unpleasant, then of everything bad, evil, and immoral. He is hatred, destruction, and annihilation incarnate, and as such he is the adversary of existence, of the Creator, of God. The Devil is the rebel of the cosmos, the independent in the empire of a tyrant, the opposition to uniformity, the dissonance in universal harmony, the exception to the rule, the particular in the universal, the unforseen chance that breaks the law; he is the individualising tendency, the craving for originality, which bodily upsets the ordinances of God that enforce a definite kind of conduct; he overturns the monotony that would permeate the cosmic spheres if every atom in unconscious righteousness and with pious obedience slavishly followed a generally prescribed course.

The ingenuous question, "Why does not God kill the Devil?" is comical enough, because we feel instinctively that it is impossible. I know of a good old woman who prayed daily in devout fervor and great piety that God might have mercy and save the Devil. Think of it closely, and this attitude is touching! How many great theologians have seriously discussed the problem whether the Devil could be saved. Like that good old woman, they were so engrossed in the literal belief of their mythology that they did not see that the problem implied a contradiction. For God and Devil are relative terms, and God would cease to be God if there were no Devil.

The universe is such that the evolution of a higher life is possible only through great strain. The evolution of the warm glow of a soul out of the cold clay of the earth, of moral aspirations out of the fierce hatred that animates the struggle for existence, of intelligence, thought and forethought out of the brute indifference of that unthinking something which *we call* matter in motion, is due to extraordinary exertions; it is the product of work performed at the expenditure of enormous energy, and constant efforts are required merely to preserve the treasures already won. Difficulties to be overcome are called in the terminology of mechanics "the power of resistance," and this power of resistance is, closely considered, an essential and even a beneficial factor in the constitution of the universe.

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If there were no power of resistance, if no efforts were needed to reach any end desired, if the world were pleasure and goodness throughout, we should have no evolution, no progress, no ideals; for all spheres of existence would float in one universal ocean of bliss, and all things would be intoxicated with heavenly delight.

Pain produces the want of something better, and deficiencies arouse the desire for improvement. If the feeling substance of moners had all their wants satisfied without further exertion, man would never have risen out of the bythos of amœboid existence, and if the man of to-day lived in a Schlaraffia, he would not trouble about new inventions, progress, or any amelioration, he would simply live on in unthinking enjoyment. There would be no need of making any efforts, no need of struggling against evils, no need of virtue, no need of working out our salvation. There would be no badness, but there would be no goodness, either. All existence would be soaked with moral indifference.

Good is good only because there is evil, and God is God because there is a Devil.

As evil is not a mere negation, so the figure of Satan in religion is not an idle fancy. Goethe says:

> "Ich kann mich nicht bereden lassen,
> Macht mir den Teufel nur nicht klein:
> Ein Kerl, den alle Menschen hassen,
> Der muss was sein!"

Now, let us look at the mythical figure of Satan as represented in theology, folklore, and poetry. Is he not really a most interesting man? Indeed, in spite of being a representative of all kinds of crimes, he possesses many redeeming features so as to be great and noble. According to the account in the second chapter of Genesis, Satan is the father of science, for he induced Eve to make Adam taste of the fruit of knowledge, and the Ophites, a gnostic sect, worshipped the serpent for that reason. Satan produces the unrest in society, which, in spite of many inconveniences, makes the world move onward and forward; he is the patron of progress, investigation, and invention. Giordano Bruno, Galileo, and other men of science were regarded as his offspring and persecuted on

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his account by the Church. And when we glance over the records of Devil contracts, we learn to have respect for the old gentleman. Milton's Satan is a grand character, a noble-souled rebel, who would rather undergo an eternity of torture than suffer humiliation.

Consider but the fact that, taking the statements of his adversaries alone, the Devil is the most trustworthy person in existence. He has been cheated by innumerable sinners, saints, angels, and (according to various old church legends) even by the good Lord himself; and yet he has never been found wanting in the literal and punctilious fulfilment of all his promises; and all the bad experiences he has had in the course of millenniums have not in the least lowered his character. His mere word is honored like the holiest oath, or like the best signature verified with seals and legal witnesses. The instances are rare in which it is known that persons with whom he has had business transactions have requested him to sign a contract, to give a pledge, or to show any proof that he would honestly abide by his word; his honesty was never doubted by anybody. And mind you, it is not the Devil who boasts of his integrity, but this is the conclusion at which we arrive from the evidences adduced by his enemies.

Our sympathy for this martyr of honest conduct, the dupe of God and man, grows when we consider our own nature and relation to his Satanic majesty. With our hands upon our hearts, must we not confess that every one of us, with all our likeness to God, has some trait or other that makes us kin to the Devil? I do not mean here to make reference to actual sin or grievous transgressions, but to things of which we scarcely think of repenting. Did we never in an hour of humor laugh at our neighbor? Did we never joke at the cost of somebody else? Did we never bulldoze, tease, or tantalise our very best friends? Did we never enjoy the awkward situation in which some poor innocent had been caught? And why should we not? If we took away from life its satire, jokes, and other "deviltries," it would lose part of its most fragrant zest, and if we constructed a man consisting of virtues only, would not that fellow be the most unbearable bore in the world, wearisome beyond description? For it is a sprinkling of petty vices that makes even a great

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man human. A mere ethical machine would neither be attractive nor arouse our sympathies.

The Devil is the father of all misunderstood geniuses. It is he who induces us to try new paths; he begets originality of thought and deed. He tempts us to venture out boldly into unknown seas for the discovery of new ways to the wealth of distant Indias. He makes us dream of and hope for more prosperity and greater happiness. He is the spirit of discontent that embitters our hearts, but in the end often leads to a better arrangement of conditions. In truth, he is a very useful servant of the Almighty, and all the heinous features of his character disappear when we consider the fact that he is necessary in the economy of nature as a wholesome stimulant to action and as the power of resistance that evokes the noblest efforts of living beings. Indeed, the Devil is the most indispensable and faithful helpmate of God. To speak mystically, even the existence of the Devil is filled with the presence of God.

God, being the All in All, regarded as the ultimate authority of conduct, is neither evil itself nor goodness itself; but, nevertheless, he is in the good, and he is in the evil. He encompasses good and evil. God is in the growth and in the decay; he reveals himself in life, and he reveals himself in death. He will be found in the storm, he will be found in the calm. He lives in good aspirations and in the bliss resting upon moral endeavors; but he lives also in the visitations that follow evil actions. It is his voice that speaks in the guilty conscience, and he, too, is in the curse of sin, and in this sense he is present even in the evil itself. Even evil, temptation, and sin elicit the good: they teach man. And he who has eyes to see, ears to hear, and a mind to perceive, will read a lesson out of the very existence of evil, a lesson which, in spite of the terrors it inspires, is certainly not less impressive, nor less divine, than the sublimity of a holy life.

EDITOR.

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LITERARY CORRESPONDENCE.

FRANCE.

THE new work which M. J. E. Alaux has just published, *Théorie de l'âme humaine, essai de psychologie métaphysique*,[1] merits our best attention, and I shall make use of this occasion to call to the notice of our readers the works of a philosopher which I regret having hitherto neglected. M. Alaux is one of the veterans of French philosophy (he was born in 1828). Openly spiritualistic he yet repudiates the dualism of Descartes and the eclecticism of Cousin. "The reducing of matter," he writes in his introduction, "to indivisible, non-extended, and active elements, to forces, and the reducing of forces to a single force, constituting a substantial foundation supporting all things: unity of type, progressive production of life from inorganic nature up to the highest stages of the scale of life and to the loftiest reaches of intelligence—this monism, this evolutionism which I have presented to the public since 1860 has nothing whatever in it of the philosophy of Cousin." M. Alaux has caught up again the threads of Leibnitz's thought. The object of philosophy, according to him, is not knowledge, but the understanding of things, and its proper task is to furnish us with new demonstrations of old and long-existing truths. Psychology, metaphysics, mind, feeling, will, human life, eternal life—such are the titles of the studies touching the human soul which make up this work.

Soul, for M. Alaux, is an activity, a higher faculty of which the particular forms are either thought, will, or feeling, and of which

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[1] F. Alcan, publisher.

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the general form is consciousness. Mind alone is known directly; states of consciousness reveal the soul. Consciousness is not, therefore, a superadded phenomenon. The soul, however, has not the consciousness of being but the consciousness of acting, and it is in its actions that it recognises its being. It is not the "thinking thing," the conscious being of the Cartesians, but the capability of conscious acts; it is conscious not of its capability but of the acts which are its realisation. Distinct from nervous action it remains as necessary as it is impalpable. The brain does not create it, but simply constitutes its medium.

One of the main aims of M. Alaux is to show that images are not the originals from whence general ideas are derived. Ideas, he says, are abstract; images, that is to say, sensations, are concrete. It is true that we grasp things by their images; but the idea bears a seal which cannot have come from sensation, and the author refuses to accept the doctrine that abstraction is contained in germ in sensation. Abstraction is in his eyes a work of the mind; if the organ *sees*, the soul *perceives*. The mind possesses, consequently, "innate ideas"; but M. Alaux makes here the following important distinction, that innate *ideas* are not innate *thoughts*, that the intelligible (idea) is not the representable (thought), and that if we think by innate ideas, we stand in need, in order to think them, of the experience which engenders them. Experience is thus the condition of the manifestation of ideas. Thought, in fine, does not shape things to fit its own moulds, as Kant would have it, nor does it shape itself to fit the moulds of things, as some empiricists maintain; but the conformity of the two is derived from a far higher source—it is pre-established. The upshot of all this is that we apprehend multiplicity by unity and finiteness by infinity, etc.; that the intelligible, which is the "necessary," gives us God, and that consequently we see God in things the same as we see the sun by its light whenever we look at illuminated objects. Lastly, the soul, according to these premises, is immortal, and M. Alaux thus builds up a doctrine of eternal life which is far removed from the rigorous Christian doctrine and which appears allied by the notion of evolution on which it rests, to Hindu thought.

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Certainly M. Alaux shows with perfect distinctness the limits of science and the inextricable difficulties of empiricism; and we cannot gainsay him the necessity of a *quid primum*, of a pre-established relation between the mind of man and the rhythm of things. But we may conceive this relation in a different manner from him, and in any event it would seem to me the proper course to stop at the recognition of this fundamental fact without venturing to draw all the deductions of philosophical spiritualism. I have set forth here more than once the reasons which prevent me from accepting the doctrine that man can mentally grasp the infinite, and I can only discover a logical artifice in the species of demonstration which M. Alaux values so highly.

As to the doctrine of immortality, M. Alaux has expounded it with the same distinctness which marks his setting forth of all the varied problems of spiritualism. The popular logic, however, will still always demand how it can be that creatures capable of doing evil are yet a manifestation of God, and the pessimists will not close their eyes to the miseries which follow in the train of man's heavy ascension towards the divine. The harmony of human feeling with human reason is a problem which no religion and no system of philosophy will boast of having solved. Even the belief in the survival of the soul cannot remove it; and reason alone has no means of demonstrating to us that survival in the sense of the spiritualists.

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The spiritists pretend to offer us experimental proof of it. Their number seems to be strongly on the increase and the accounts of their *séances* are very circumstantial. If we had the inclination, were it only from curiosity, to join this movement, which is to-day drawing to it so many disturbed souls and even inquiring scientists whose good intentions we cannot suspect, we should read with interest the French translation of a large work by a Russian spiritist, M. ALEXANDRE AKSAKOF, entitled *Animisme et Spiritisme.*[1]

M. Aksakof has wisely arranged his facts in distinct categories. He studies first the so-called phenomena of "materialisation," then

[1] *Librairie des Sciences psychiques.* Leymarie, publisher, 1895.

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he attacks the study of the "intelligent agent," which according to his contention is manifested in the phenomena of spiritism, and lastly, he sets himself the task of developing and justifying "the hypothesis of spirits." His critical and compilatory work has been conceived as a sort of answer to the objections formulated by Eduard von Hartmann. The latter does not deny all the facts of materialisation; to explain them he admits that the nervous force of the medium is capable of producing dynamic effects and the effects observed would then be the result of that nervous force acting "at a distance." The subjective state of the participants, that is to say, hallucination, would accomplish the rest and be amply sufficient to explain the miracle.

Spiritists, as is natural, will hear nothing of hallucination. They maintain the objective reality of these phenomena, of which they claim to have demonstrative evidence by photographic records and material imprints. Although not admitting that all the effects produced are directly effected by the medium, who is simply the occasion of them, they yet believe in the real presence of spirits or phantoms.

I have had no personal experience in these matters and cannot therefore give an authoritative opinion of them. Nevertheless, the hypothesis of Von Hartmann appears to me insufficient to account for the various details of the phenomena, such as they are described; besides, it is a risky one and is apt to carry the philosopher of the "unconscious" further than he is perhaps desirous of going. However, he has sought the explanation in the place where it is likely to be found—in a more complete knowledge of the nervous system. The part played by nervous action is certainly considerable in the phenomena of spiritism, if indeed it does not constitute it all. The believers are too hasty in evoking phantoms and in casting in old moulds the facts which they furnish us. The expectant attitude is perhaps more potent here than the simple state of faith. M. Aksakof personally writes with moderation and displays a prudence which is highly commendable. His frankness in the discussion does him honor, as does also his extremely sincere conviction.

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An elegant little volume by M. EDMOND THIAUDIÈRE, *La Soif du Juste*, is the sequel of a series of *Notes of a Pessimist*, published under the titles of *La proie du néant*, *La complainte de l'être*, *La Décevance du vrai*.[1] I have not yet introduced this writer to our readers, but they will readily appreciate his merits. If M. Thiaudière expresses his doctrine in a dispersive form and gives us only "thoughts," he nevertheless possesses a philosophy which will appear sufficiently coherent after an attentive reading. I shall not reproach this author for his bitter sentences, nor do I desire to reopen the eternal discussion of optimism and pessimism. Whether or not we shall contest his right of imposing upon his conception of the world a "sentimental" color, and of seeing things, so to speak, under the angle of his own subjective feeling, we shall nevertheless soon gain the impression of his perfect sincerity, of his good will, and may perhaps end by declaring that after all he is a pronounced meliorist. He dwells too extensively upon the merits of kindness and on the superiority of altruism for a person that does not expect some amelioration of the lot of man from these sources. "There is," he writes, "something divine in the world for the reason that there is something divine in man; it is this divine that should be invoked and evoked."

The possibility of God, who "would be nothing less than the impersonal bond between things," the necessity of religion and of the cultivation of ideals, evolution of the spirit away from flesh and brutal appetite towards delicacy of sentiment, the solidity of moral law and of duty,—these are the strong points in the doctrine of M. Thiaudière. The doubt which he expresses touching the concepts of God and of soul, of liberty, and of survival after death, is productive of no doubt in practical action, and his philosophy presents as a result of these features a marked note of beneficence.

"Although the cruel play of nature," he says, "tends to demonstrate that divine justice is only a sublime dream of man, it is nevertheless the best plan to count upon it." He reaches thus the following thought: "Those who do not believe in God know per-

[1] L. Westhausser, publisher.

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fectly well that even if God does not exist yet things go on exactly as if he did exist, for no one can trespass with impunity upon the established order." I, too, have held that the order which reigns in the world gives us merely a sort of mechanical justice, for which it is the duty and lofty ideal of humanity to substitute a moral justice. In this point, therefore, I subscribe to the doctrine of M. Thiaudière, and I do not think we can invalidate the moral lesson which he presents to us in the following ingenious form: *"L'immoralité donne souvent de beaux acomptes, mais toujours elle se solde par un passif énorme."*

In fine, M. Thiaudière is a genuine thinker. Those who do not know him will be glad that I have called their attention to his name and writings.

* * *

The work of M. JACQUES LOURBET, *La femme devant la science contemporaine*,[1] is written with all the fervor of youth and is loaded with facts. But I fear the author has not really "seen" the problem of which he treats. He seems particularly bent on demonstrating that women are not animals, which we will grant him from the start, and he ends with claiming for them *absolute liberty*, which is a formula either terribly indefinite in extent or altogether harmless in its scope.

That women may possess genius, no one has ever doubted and numerous examples are witness of it. It is true that we do not find superior women who have been really the peers of superior men. But at bottom that is not of great importance and presents no real interest, except for psychological study. The sociological question is different. ☐ It is not requisite here to know whether a women is as competent as a man to plead before a legal tribunal, or to cut off a leg, nor even to decide whether from the point of view of mind the feminine sex is inferior to, equal to, or the equivalent of the male sex. No, the problem consists essentially in determining the social function of woman consonantly with her biological function. We may reject on this point the empirical solution of history, but we

[1] F. Alcan, publisher.

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cannot neglect it. How can we possibly maintain that evolution has with regard to one of the sexes been artificial in all places and from the commencement of time? The precise task of evolution, M. Lourbet will tell us, is to lift woman out of her humble sphere, to elevate her higher, and to break the constraints which now weigh down upon her. Undoubtedly woman must benefit by the general progress of the species, and it would be unjust to say that she has not benefited thereby very extensively. But let us not forget that evolution will never end in inverting the rôles of the sexes nor make of organisms which are physiologically distinct, organisms which are the same; and this organic distinction will always have consequences which the fanatics of woman's emancipation at present misunderstand, although they certainly must have some mental reservations upon the subject.

It is difficult to predict what will happen to-morrow in society; but one can foresee at least that the laws of nature will always intervene to redress the work of human laws which do not conform to nature. In all cases the question is, I repeat, not the discussion of useless superiorities, nor the systematic exclusion of women from all rights, nor dispensing with her necessary services and duties; but it is to find out within what limits and under what conditions it is profitable for society and useful for women themselves to extend the sphere within which her actions have hitherto been confined. The solution of the problem should be sought neither in absolute principles, nor in the arguments which exceptional instances offer; it can only be proportioned to the social medium, to the race, and to all the practical conditions of the period under discussion. "The roughest blow which can be delivered to the cause of the emancipation of women in France," said Madame Clémence Royer to me one day, "would be to grant them forthwith all the rights which their imprudent advocates claim for them."

* * *

I shall mention in concluding the new edition of a work by M. Émile Boutroux, *De la contingence des lois de la nature*, a work purely dialectical in character; an *Etude sur l'espace et le temps*, by M. Georges Lechalas, in which are treated with competence the

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abstract questions of geometry and mechanics, the problems of "similar worlds" and of the "reversibility of the universe," which lead the author to a criticism of the notions of infinity and continuity; a curious work by M. L. DUGAS on *Le psittacisme et la pensée symbolique*, in which the author after having presented language as a simplification or abridged notation of thought shows that parrot-like mechanicalism of speech is the rock on which language stumbles, when words have become abstract and empty of all real contents.

In the list of historical works I have still to signalise a very complete edition by M. E. DREYFUS-BRISAC of the *Contrat social of Rousseau*, and finally an extremely learned work by M. ANDRÉ LICHTENBERGER entitled *Le socialisme au XVIII siècle*, wherein we can follow with lively interest the budding and encasement, so to speak, of the ideas and systems which are so profoundly at work in our modern societies.[1]

LUCIEN ARRÉAT.

PARIS.

[1] The works last mentioned are published by Alcan. I may also note the French translation of a book by Count Leo Tolstoï entitled *Les Evangiles* (Perrin et Cie, publisher).

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BOOK REVIEWS.

HERMANN VON HELMHOLTZ'S UNTERSUCHUNGEN ÜBER DIE GRUNDLAGEN DER MATHEMATIK UND MECHANIK. By *Dr. Leo Koenigsberger*, Professor of Mathematics in Heidelberg. Leipsic: B. G. Teubner. 1896. Pages, 58. Price M. 2.40.

The present pamphlet, which is the elaboration of an address delivered last year on the occasion of a memorial celebration in honor of Karl Friedrich, the rehabilitator of the University of Heidelberg, gives a rapid but lucid presentation of the scientific achievements of Helmholtz in everything relating to mathematics and mechanics. One gets from it a renewed and deepened sense of the tremendous comprehensiveness of Helmholtz's scientific activity, which in this respect has scarcely been rivalled by any inquirer of ancient or modern times, with the single exception, perhaps, of Aristotle. Many have exhibited greater acumen and genius in one or a few departments, but none have left the impress of originality and profundity on so many. Galileo, Huygens, Thomas Young, Faraday, J. R. Mayer, Lagrange, Gauss, possibly surpassed him in scope and significance of individual achievements, in classical elegance of presentation, or in philosophical grasp, but they have not rivalled his wonderful versatility which alternately resumed and elaborated nearly every province of positive, physical research. There have been some who have denied him genius of the purest and most unqualified type, but none can gainsay his having reached the pinnacle of consummate virtuosity. His name has drawn to itself and absorbed a preponderating share of the scientific achievements of the closing half of the nineteenth century, and like all overtowering personalities his fame will no doubt be handed down to posterity associated with performances in which others have taken no less distinguished and perhaps even more prominent a part. With few exceptions he is unconsciously accredited in all academical circles not only with the independent enunciation of the principle of the conservation of energy, that crowning generalisation of the science of our century, but even with its sole enunciation, and in the popular world the tendency is absolutely dominant, to accord to him the sole merit of its discovery. Impartial judges assert that Mayer, even barring the questions of independence and priority, which certainly belong to the Heilbronn physician, was, date for date, far ahead of Helm-

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holtz in the philosophical appreciation of the principle. Certainly there can be no doubt of Mayer's merits and share in the original discovery. Yet Helmholtz's, not Mayer's, name will go down in popular imagination and history exclusively associated with the greatest scientific triumph of our age. Thirty years ago and more, his claims on the same head were, in an able article in the *English Cyclopedia*, entirely subordinated to those of Grove, who delivered his lecture on the "Correlation of Physical Forces" as early as 1842. Now, in the accounts of the discovery of the law, there is scarcely a mention of Grove—such is the increasing inertia of a scientific reputation. And as he overshadowed in this province Mayer, Joule, Carnot, and others, so, too, in his famous researches regarding the foundations of mathematics, in his great systematic investigations of physiological optics and acoustics, he naturally and by sheer force of his scientific ascendancy obscured or ingurgitated a goodly portion of the work of other equally meritorious inquirers.

But this is not strange. The same natural result has occurred in the case of all great historical and scientific personalities, and even of places, though in a less degree now-a-days than in the old mythical periods. It is an imperative social law. Legend and history attribute to Charlamagne all that was good and great in his time: Venice, Rome, and Troy[1] are the inheritors of all the glories and of the history of their namesakes; and, so in a successively diminishing degree Pythagoras, Aristotle, Newton, Leibnitz, and Alexander von Humboldt have stood as the epitomes and incarnations of their scientific time, country, and domain. Gigantic maelstroms, they have sucked into their maws the philosophical and scientific driftwood of nearly the whole contemporary world!

One of the most embittered opponents of Helmholtz's title to genius and fame is Dr. E. Dühring, a highly independent, powerful, and versatile thinker, who many years ago conducted a battle royal with the authorities and faculty of the University of Berlin on the occasion of his being refused a chair of philosophy in that institution. In this encounter Helmholtz drew upon himself Dühring's undying wrath. Speaking of the confusion which exists in the popular mind regarding the intrinsic worth of the great scientists and thinkers of the world who by the vulgar are universally rated much lower than the fashionable authorities of the day, Dühring once cited as an instance a passage in Schlosser's *Universal History* where the well-known historian in a grandiloquent dash of rhetoric speaks of "the history of mathematics from Archimedes to Kästner!" Kästner, a professorlet in the last century at the University of Göttingen, whose main achievement was a tolerable history of mathematics, and Archimedes, the incarnation of the mathematical genius of antiquity! "Really," interpolates Dühring with fine derision, "One might as well speak of the history of physics from Galileo to *Helmholtz*!"

Contrasted with this exaggerated scorn we may place the present estimate of Dr. Koenigsberger, Professor of Mathematics in Heidelberg, which exhibits the

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[1] See Carus Sterne's *Trojaburgen*. Glogau. 1893.

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glorious plenitude of Helmholtz's work in but a single department. We read here of his philosophical discussions relative to the foundations of mathematics, which opposed the modern empirical view to the transcendentalism of Kant; of his physiological and psychological researches which furnished the foundations of his subsequent empirical theory of the origin of space and time; of his researches in the non-Euclidean geometry proper; of his application of the latter to colors; of his enunciation of the principle of the conservation of work; of his hydrodynamical and aerodynamical investigations; of his theory of vortices; of his researches in electricity; of his consequent examination of the fundamental principles of mechanics and the theorems resulting therefrom; and finally of his theories regarding the dynamic constitution of matter, the ether, etc. This last was the final work of his life, and we learn that the intended subject of his address at the meeting of the German physicians and inquirers in Vienna was actually "Permanent Forms of Motion and Apparent Substances." What the character of this address would have been is unknown, as only a few notes regarding it were found among Helmholtz's literary remains, but it is supposed that it would have elaborated the philosophical foundation of the extensive researches which he had been conducting in his last years regarding the basic principles of mechanics and physics and at which he had hinted in his Introduction to the *Mechanics* of Hertz. Of his achievements in this department, let us finally add, the reader will find in this pamphlet of Dr. Koenigsberger a concise and worthy account. A fine portrait of Helmholtz taken from the oil painting in the possession of Frau Ellen von Siemens, forms the frontispiece of the brochure.

THOMAS J. MCCORMACK.

DIE UEBERWINDUNG DES WISSENSCHAFTLICHEN MATERIALISMUS. By *Wilhelm Ostwald*, Professor der Chemie an der Universität Leipzig. Leipsic: Veit & Comp. 1895. Pages, 36.

This pamphlet of thirty-six pages is a lecture which Prof. Wilhelm Ostwald, one of the most prominent chemists of Germany, and Professor at the University of Leipsic, delivered on September 20, 1895, before the Association of German Naturalists and Physicians at Lübeck. It is a protest against the materialism of science, and the author is fully aware that he has taken a position at variance with the opinions of many great scientists. He has the consciousness of a lookout whose duty it is to call "breakers ahead!"

The famous *Ignorabimus* of Du Bois-Reymond is in Professor Ostwald's opinion nothing but a protest against the mechanistic world-conception which is at present dominant in scientific circles. Ostwald does not seriously believe in the *Ignorabimus*, but claims that we have not as yet fully understood the salient point of the problem, for there are processes which are not representable by mechanistic equations, and this much is certain that we must give up the hope of interpreting the world as a mere play of atoms. Professor Ostwald proposes to replace mechanism by the energetic world-conception. The result of his investigation remains

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at present negative. He calls attention to the fact that the pressure of gases is equal in all directions. The factors of electric energy, potential, and electrical quantities generally, such magnitudes as may be called polar, being representable not only by numbers but also by opposite signs which, when added, reduce two equal quantities to zero, are not known in mechanics, and this Professor Ostwald declares is the reason why we are unable to find a mechanical hypothesis for electrical phenomena. By reducing the laws of nature to analogous modes of an energy, the author hopes to attain to a science that would be free from hypothesis. Professor Ostwald finds a substratum of energy redundant, and believes that energy should, with the exception of time and space, be the sole magnitude for scientific equations. He does not enter into a discussion of the details of his world-conception, but considering that energy is expressed either in motion or in the possibility of motion, his philosophy is more mechanistic than his censure of the mechanistic world-conception seems to allow.

He concludes his lecture with the question: Is energy, indispensable and useful as it is for the comprehension of nature, indeed sufficient for this purpose, or are there phenomena which cannot be formulated in the hitherto known laws of energy? This question is briefly answered in the negative, and we may expect that Professor Ostwald will present his arguments on this head in future investigations. But we wish to state at once that the conception of energy is as little all-sufficient for the interpretation and explanation of nature, as are the conceptions matter or spirit. For there are phenomena in nature which cannot be reduced to energy. We ought to remember that energy, matter, space, and spatial relations, sentiency, including all subjective phenomena of soul-life, ideas, and all representative psychical images of mental life are different fields of abstraction. None of our generalisations will be found sufficient to serve as an all-comprehensive idea under which all phenomena can be subsumed. Monism should not become a single-substance theory. The principle of genuine monism is preserved when we bear in mind that the totality of nature is one indiscerptible entirety, and that our various conceptions are aspects of different features of reality. Professor Ostwald will find it impossible to explain the nature of ideas from any kind of energy, for ideas have nothing to do with energy. What has the notion of a mathematical line or circle to do with either pressure or motion, or with any mode of motion, be it electricity, light, or what not?

Professor Ostwald's lecture has created quite a stir in the scientific world, and it appears that he has been greatly misunderstood. He has been suspected of a hankering after unscientific notions of mystic and agnostic world-conceptions, but from the trend of the lecture it seems to us quite clear that the tendency of his thought is exactly the opposite. He wants to realise the ideal of a genuine positivism in which science would be a mere description of facts free from all hypothesis. Though the lecture does not propose a definite solution of the problem, and gives only a hint which in our conception does not lead in the right direction, we have

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devoted so much space to its discussion because Professor Ostwald's thoughts are suggestive and will not fail to provoke a discussion of the most important problem of science, which, in brief, is the question, "What is the philosophy of science?"

P. C.

HERMANN GRASSMANN'S GESAMMELTE MATHEMATISCHE UND PHYSIKALISCHE WERKE. I. Band. II. Theil. Die Ausdehnungslehre von 1862. Leipsic: B. G. Teubner. 1896. Pages, 511. Price, M. 16.

The task of publishing a complete edition of the mathematical and physical works of Hermann Grassmann was recently undertaken by the Royal Saxon Academy of Sciences, and the work of editing them has been entrusted to Friedrich Engel assisted by Jakob Lüroth, Eduard Study, Justus Grassmann, Hermann Grassmann, Jr., and Georg Scheffer. The first volume, which is now completed, embraces two parts: the first, the *Ausdehnungslehre* of 1844 (also containing the prize essay on geometrical analysis), has already appeared; the second, the *Ausdehnungslehre* of 1862, is that now in our hands. The relation of these two famous books will be better understood by a glance at Grassmann's life, which is interesting in more points than one, and whose contemplation is more apt to hold our attention than would be a difficult and abstract analysis of the contents of his works.

Hermann Grassmann, independent creator of a branch of mathematics which is accounted by some the most consummate piece of work in this direction that the present century has produced, was born (1809) and destined to spend his life in the German city of Stettin, commercially an important place and the central emporium of the German Baltic trade, but naturally bereft of the incentives and ideal environment which usually go to the formation of a scientific career. Grassmann, however, came of a talented family and one that remained talented. His two sons, Hermann Grassmann, now at Halle, and Justus Grassmann, at Brandenburg, have displayed unusual mathematical attainments.[1] His father also was a mathematical teacher of some note and had published a number of profound and original writings in which were contained the germs that determined the subsequent scientific bent of his son.

Hermann Grassmann first became a student of theology in Berlin and had among his teachers Neander and Schleiermacher, the latter of whom was not without influence upon his philosophical development. Now as afterwards his studies varied much, and even included the mathematical works of his father, but most of his work was done in philology. With interests comprehensive rather than vacillating we find him, shortly after taking his first theological examination, a teacher of mathematics in Berlin where he made the acquaintance of Jakob Steiner, whose epoch-making work on *Synthetic Geometry* had appeared two years previ-

[1] Note the former's *Punktrechnung und projektive Geometrie*, the second part of which, *Grundlagen der projektiven Geometrie*, appeared last Easter in the programme of the Latin *Hauptschule*, of Halle.

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ously. A year or so afterwards, he returned to his native city where he was installed as teacher of various branches at the Ottoschule and where he devoted himself alternately to chemistry, crystallography, botany, mathematics, and philology. In the last branch he even published two small works, the forerunners of his later activity in this field. He had not yet given up theology, in fact he had passed at just this time his second examination for the preachership, but his previous studies for a teacher's diploma in mathematics had led his interests into different fields and these gradually and unconsciously brought with them the abandonment of his theological ambitions.

This was in 1839. In preparing for his full teachership in mathematics and physics, he read Lacroix, Lagrange, and Laplace, the study of the latter of whom suggested a treatment of the problem of the tides, taken as his thesis, in which he developed and applied new and greatly abbreviated methods of reckoning (1840). This was the germ of the new science, and it is interesting to note that it took its rise in connexion with a practical mechanical problem, as have many other branches of mathematics, and notably the Calculus of Variations.

From this time on, the fundamental ideas of the coming *Ausdehnungslehre* began to take a systematic shape in his mind. In 1842 he was called to the Gymnasium, and in the succeeding year to the Realschule. Now naturally his eye was bent upon a professorship in a university where his scientific ideas under the stimulus and correction of his colleagues, and in the clarification which results from their being communicated to others, would have a chance of unfolding and of being disseminated. But this was an ambition never to be realised.

His study of the works of Möbius and Poncelet which of any then existing had most kinship with his thought led to a paper in *Crelle's Journal* on the *Theorie der Centralen* which first displayed his wonderful powers of generalisation. In 1844 his famous *Lineale Ausdehnungslehre* appeared, which not only is the most important of his own works but is rated by competent critics as one of the most remarkable mathematical creations of all times. This is the first of the works mentioned at the beginning of this notice, and together with the prize-essay on Leibnitz's calculus of position, formed the first instalment of the present Teubner edition of his collected works.

It was an original creation; Grassmann's methods of reckoning were altogether novel; and the deduced laws had reference entirely to abstract constructions in extremely abstract domains. The terminology was strange. The argument was not developed in connexion with concrete data, not even with the data of space, although numerous geometrical and mechanical applications were appended to the theorems. Owing to its intrinsically limitless possibilities of application, the treatment of the author was significatory rather than expository. In addition, it bore a philosophical stamp which was not common then in mathematical works. A meteor in the realm of scientific thought, it seemed to break all the traditions of evolutionary growth: it had no predecessor.

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As an offset to this sudden and inexplicable appearance of the new science, Grassmann wrote for his book a preface which almost attained Galilean heights in its frankness and sincerity of character, and which gave a perfect insight into the workings of his mind. His plea for indulgence in this preface is an almost pitiable expression of his scientific seclusion and isolation.

On the book's appearance, no one seemed to grasp what the author was driving at. Gauss, Grunert, and Möbius considered it, but nothing at the time came from their outward sympathy. With the exception of one unimportant reference, not a single review or mention of it appeared in other works or magazines, save Grassmann's own *Selbstanzeige*, until the early seventies. Eight years after its publication Möbius remarked that Bretschneider of Gotha was the only mathematician he knew of that he read it through.

Appreciating the difficulties that beset the comprehension of his book, Grassmann set to work to unfold the practical capabilities of his method which he did in a long series of articles in the mathematical journals of Germany, all of which were signalised by great originality and acuteness, and on which his sole fame as a mathematician until the later years of his life rested. His failure again to receive recognition, however, soon resulted in his partially abandoning these studies, and caught by the enthusiasm of the year 1848, quite contrary to his natural disposition, he became for a while actively interested in politics. Then he took up the study of comparative philology, Gothic, Lithuanian, Old Prussian, Old Persian, Russian, and other languages. He published a grammar and reading-book of German.

In 1852, on the death of his father, he succeeded the latter as the first mathematician with the title of Professor at the Gymnasium of Stettin. Were it not for this change he would probably have given up physics and mathematics forever. Here, however, falls his important correspondence with Möbius, a number of important articles in the mathematical journals, a discussion regarding the priority of his method with Cauchy, and the efforts which he made and the prospects which were held out for advancement to a university professorship. Such a position was now highly desirable in the interests of a fruitful scientific activity. Pecuniarily it would have been a retrograde step, but the work at the Gymnasium demanded too much time and effort, and was too absolutely barren of the right kind of intellectual suggestion for his thought to yield its best results. He lacked students and hearers with whom he could inoculate his ideas and who would form a nucleus for their propagation. But the chance never came, although there were frequently promises and hope.

He was now again hard at work on the second part of the *Ausdehnungslehre*. Möbius and Grunert had complained of the predominantly philosophical form in which the first *Ausdehnungslehre* had been cast, and attributed its lack of success to this circumstance, which they regarded as repellent to the mathematical mind. At their suggestion, and by an incredible outlay of labor, Grassmann remodelled the work entirely, and presumably under the influence of his own impressions of

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mathematical method gained in elementary teaching, but which were at variance with the growing mathematical taste of the age, gave to it a predominantly Euclidean form.

Such was the origin of the *Ausdehnungslehre* of 1862—the work which is now before us. Two opinions obtain regarding its value in a methodological aspect as compared with the *Ausdehnungslehre* of 1844. Victor Schlegel, friend and disciple of Grassmann and a prominent elaborator of his ideas,[1] while admitting the prodigious importance of the new conceptions contained in it, is of opinion that the work suffered unspeakably by its being recast into its Procrustean Euclidean mould. It had not been inexact in its original form, nor did its foundations lack logical stability. Its drawback had been simply a want of practical illustrations. This want had, it was true, been richly supplied in the second edition, which abounded in analytical and geometrical applications, and which contained a new and extensive chapter on the theory of functions, untouched in the original work, and which was a veritable incubator of the germinal ideas at the basis of many modern branches of mathematics like the theory of determinants and certain recent extensions in algebra. The treatment, however, was fragmentary and disjointed. Its unnatural, stiff Euclidean movement obliterated the psychological landmarks which are so necessary for our guidance in re-making the intellectual conquest of a new and untrodden province. The mastery of a single demonstration, says Schlegel, required as much effort as the comprehension of a whole chapter of the *Ausdehnungslehre* of 1844. But worst of all, the possibility of a broad mental survey, of a comprehensive *aperçu* of the development as a whole had been entirely lost. These circumstances, according to Schlegel, were directly accountable for its failure, which was even more complete than that of its predecessor. Friedrich Engel, on the other hand, the editor of the edition before us, regards the *Ausdehnungslehre* of 1862 as a distinctive advance upon that of 1844—an advance exhibited not only in its greater variety and richness of contents, but in its entire formal construction. According to him, the foundations of the *Ausdehnungslehre* of 1844, although brilliant in their suggestiveness, were not unequivocally established. Its fundamental conceptions were too general and philosophical in character and consequently too devoid of palpable contents, to form a solid and trustworthy substructure for a practical working-system. Tacit assumptions were necessary for its logical application and development, all of which was remedied in the second work, and the necessity of the same demonstrated by the consequent enormous extension of the scope and utility of the new method.

But with whomsoever the truth may lie, certainly the failure of the book could not have been more absolute. The work was nowhere reviewed, nowhere mentioned. Grassmann's attempts to obtain a university position again failed. The

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[1] See his pamphlet *Hermann Grassmann, sein Leben und seine Werke* (Leipsic: F. A. Brockhaus, 1878), a vivid and adequate sketch of Grassmann's life and career.

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dream and ambition of his youth melted away. And now this sorrowful spectacle is presented to us. At the advanced age of fifty-three he laid aside the studies which were soon destined to make his name one of the most famous in Europe and began a fresh career with unbroken heart and undampened hope. He took up the study of Sanskrit. The vigor and unweariedness with which he devoted his energies to the new work were marvellous when we consider his age, disappointments, and the diametrically opposed character of his previous studies and habits of thought. But more marvellous was his success, which is an astonishing testimony of the versatility of his genius and talents. Here that reward, which had been denied him in his chosen and natural field of effort, crowned his endeavors. From the early sixties until shortly before his death in 1877 he worked successfully at two tremendous undertakings, a *dictionary* and a *translation* of the Rig-Veda—at a time when the material and helps for such work were extremely meagre. His first recognition in the academic world came to him as a philologist not as a mathematician. Not to mention other honors, he was elected a member of the American Oriental Society, as he also found here one of his first few individual recognitions as a mathematician.

In the meantime, however, attention had in various mathematical quarters been directed to the *Ausdehnungslehre* of 1844. Hankel, then a young Privatdocent in Leipsic, had sought to bring it to the fore. Through Clebsch he was elected a corresponding member of the Göttingen Society of Sciences. Mention of him became more and more frequent. Preyer based upon his work a new theory of sensations. Schlegel elaborated in detail some of the principles of the *Ausdehnungslehre* and now actually a demand for the book arose, the first edition of which by a horrible irony of fate was reported by the dealer to have been *exhausted*. No one could account for this silent but terrific demand for the book until it was discovered that the whole edition had been used to satiate the *Wissensdurst* of a paper-mill. Yielding to the solicitations of his friends, therefore, Grassmann set to work at the preparation of a new edition, which he completed just shortly before his death (1877). Several important mathematical and physical papers also were published in this period of his incipient fame, which now dawned with full glory upon him as his life closed.

A note of bitterness and regret pervades our contemplation of Grassmann's life, for we are constrained to wonder what would have been its fruits had he found a more fitting and congenial sphere for the exploitation of his abilities, and had his energies not been scattered over so many fields. But that note of bitterness, however justified its cause, was never marked in his own career, which was one of complaintless serenity and of unceasing devotion to duty and to science. His unselfishness was requited by the love and confidence of his students, colleagues, and townsmen, in whose social, intellectual, and artistic advancement (he was a musician of ability, too,) he took no mean share. In this modest civic sphere his talents shone with unconsciously heightened lustre.

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There remain of Grassmann's works, presumably to be comprised in this series, twenty-four mathematical papers published in *Crelle's Journal*, the *Mathematische Annalen*, the *Proceedings of the Royal Society of Sciences of Göttingen*, and Grunert's *Archiv*; three separate treatises on elementary mathematics, mechanics, and the relation of the *Ausdehnungslehre* to the non-Euclidean geometry; and finally, seven papers on various branches of physics. We have merely to add that the present volume, the *Ausdehnungslehre* of 1862, is printed in unusually good form, is richly supplied with annotations by the editors, and that in all cases where changes have been made in the text, an exact transcript of the original passages is given in an Appendix. A good index also adorns the work. THOMAS J. MCCORMACK.

TRACTATUS DE INTELLECTUS EMENDATIONE. Translated from the Latin of Benedict de Spinoza by *W. Hale White*. Translation Revised by *Amelia Hutchison Stirling, M. A.* (Edin.). New York: Macmillan & Co. Pages, 62. Price, $1.00.

The *Tractatus de Intellectus Emendatione* was one of the earliest works of Spinoza. We learn from the excellent Preface of the translator that Spinoza in a letter to Oldenburg in 1661 mentions having written a *complete* little treatise on the subject of the amendment of the understanding but had delayed the publication of it on account of the rancor of the theologians. As there is nothing in the present *Tractatus* answering to the points which Spinoza mentions as having developed there, the conclusion is natural that the original editors of the present work had in their hands only the first draft of the completed treatise, a conjecture confirmed by the fact that in the form in which we now have it, there are numerous gaps, lost references, and marked crudities and ambiguities of style. Besides, the conclusion is totally missing.

The purpose of the treatise is the discovery of the highest good and is thus moral not speculative. But the method itself is speculative, for according to Spinoza's view although speculation is not in itself the goal, it is yet the way by which the goal is to be reached. Consequently, for attaining the highest good, the reformation of intellectual procedure is the first thing to be taken in hand, and Spinoza accordingly describes his four modes of arriving at knowledge, all of which are now perfectly familiar to students of philosophy. Afterwards he takes up the problem of certainty and handles it in an interesting manner. "How do I know that I know?" "How am I sure that all science is not a delusion?" In all such interrogations he detects "the sophistry of the infinite regress." "If it be necessary that I should know that I know, it is necessary that I should know that I know that I know."

Interesting is his application of the same sophistry to prove that no tool which men use could ever have been invented. "It is the same with tools; and the "argument proceeds in the same way. For example, in order that iron may be "forged, we need a hammer; and if we are to have a hammer, we must make one.

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"To this end we need another hammer and other instruments; and to obtain these "we shall need other instruments and so on *ad infinitum*. Thus anybody might "fruitlessly endeavor to prove that men are unable to forge iron. But inasmuch "as men at the beginning, with instruments furnished by nature, were able to make "certain very easy things, although with great labor and imperfectly, and with "these, when they were finished, made other and more difficult things with less "labor and more perfectly, and thus by degrees, advancing from the most simple "productions to tools, and from tools to other productions and tools, were able to "accomplish with small labor so many and such difficult things, so also the intel-"lect, by its own native force, forms for itself intellectual instruments by which it "acquires additional strength for other intellectual works, and from these works, "other instruments or power of further discovery, and thus by degrees advances "until it reaches the pinnacle of wisdom. That this is the way in which the in-"tellect proceeds will be easily seen, provided only we understand what is the "method of investigating the truth, and what are those instruments furnished by "nature which alone are required for the production of other instruments from "them in order to advance further."

Afterwards, follows a discussion of true or adequate ideas, of ideas of fancy, of false ideas and doubtful ideas. The second part of the method consists in "laying down rules whereby unknown things may be perceived in accordance with the standard of the true idea." The treatise breaks off abruptly with the remarks supplied by the old editors—*Reliqua desiderantur*. Nevertheless, as the old editors remark, despite the defects in the book, "it contains much that is remarkable and useful and not a little profitable to the sincere inquirer after truth." The unsigned preface preceding the translation is a lucid and exemplary piece of work.

The price of the book is rather high. T. J. McC.

ON GERMINAL SELECTION. By *August Weismann*. Chicago: The Open Court Publishing Co. 1896. Pages, xii, 61. Price, 25 Cents.

Professor Weismann's Essay on *Germinal Selection*, which was originally an address delivered before the International Congress of Zoölogists at Leyden, in September last, appeared first in *The Monist* for January, 1896, and not until afterwards in its original German version. In its present form it has been enriched by an appendix of thirteen pages discussing the history, bibliography, and present status of such questions as natural and chemical selection, variation and mutation, definitely directed variation, ultimate vital units, utility, internal evolutionary forces, etc., and further by a preface of twelve pages in which Professor Weismann sets forth his views on the method of scientific research, and defends the principles by which he has been guided in the elaboration of his theory of heredity and of his present doctrine of Germinal Selection. With regard to Germinal Selection itself, little need be said here, as its details are presumably already familiar to our readers. Its object is a rehabilitation of the principle of selection which outwardly seems

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endangered by the upshot of recent researches, and the demolition of which would in Weismann's view be synonymous with the renunciation of all inquiry concerning the causal relation of vital phenomena. "Knowing this factor," he says, "we "remove, it seems to me, the patent contradiction of the assumption that the gen- "eral fitness of organisms, or the adaptations *necessary* to their existence, are pro- "duced by *accidental* variations—a contradiction which formed a serious stumbling- "block to the theory of selection. Though still assuming that the *primary* variations "are "accidental," I yet hope to have demonstrated that an interior mechanism "exists which compels them to go on increasing in a definite direction, the moment "selection intervenes. *Definitely directed variation exists*, but not predestined "variation, running on independently of the life-conditions of the organism, as "Naegeli, to mention the most extreme advocate of this doctrine, has assumed; on "the contrary, the variation is such as is elicited and controlled by those conditions "themselves though indirectly."

Interesting and valuable to scientists who have not pondered deeply on the ways of their work, are his remarks on the rôle of imagination in research and on the function of theory. He claims for his determinants and ids the same position in biological theory that Maxwell claimed for his mechanical fictions in the province of electricity. He regards them merely as representative models or pictures, or rather as analogues, by the manipulation of which we can mentally follow out the course and development of nature. If our theories serve this end, they have fulfilled their purpose. He contends there is absolutely no other choice left for us in the field of heredity. The problem is too minute for developmental mechanics ever to think of mastering it. In the place of facts impossible to observe, therefore, he claims to have put a theory based on facts, by the mutual interaction of which the approximate truth will be reached.

The value of the pamphlet, which appears in a very cheap but substantial form, as a number of the Religion of Science Library, is enhanced by the addition of an index. T.

INDUCTIVE LOGIC. By *Wm. G. Ballantine*, President of Oberlin College. Boston and London: Ginn & Co. 1896. Pages, 174. Price, 90 cents.

The student of logic must not expect to find in this booklet by the President of Oberlin College an exhaustive and original examination of the principles of inductive reasoning, but simply an attempt to "reproduce some of the excellencies" of Dr. Fowler's "bright and interesting" work, the *Elements of Inductive Logic*, while essaying to substitute a sounder analysis of fundamental principles. The manner in which the book has been compiled is based upon that of most of the newer text-books of logic, such as Jevons. Numerous extracts from scientific treatises have been cited as practical examples of reasoning and the discussion of the principles based upon the data therein found. These extracts are well chosen and eminently designed to enliven and diversify the study of the subject. In the presentation of

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his points, whether original or borrowed, Mr. Ballantine is concise and clear. Altogether, the book is well adapted to intermediate academic instruction, although at the particular elementary stage of the educational course for which it is most suitable, most pupils have not yet attained a scientific grasp and breadth of vision which makes such a study a profitable undertaking. Into the author's points of logical doctrine we cannot enter. μκρκ.

BUDDHISM IN TRANSLATIONS. By *Henry Clarke Warren*. Cambridge: Harvard University. 1896. Pages, 520. Price, $1.20.

Mr. Henry Clarke Warren's book on Buddhism, will at once take a prominent place among Buddhistic publications. It is the first systematic collection of original translations from the southern canon of Buddhistic Scriptures, including not only passages of those books which have become accessible through the translations of other Pali scholars, but also new materials, for instance, selections from the Visudhimagga which had to be translated from manuscripts.

While Mr. Warren's book is to be recommended as an indispensable *vade-mecum* to all those who for one reason or another are interested in Buddhism, we must here state at once that the uninitiated will, naturally and necessarily, encounter great difficulties, for to appreciate the book one ought to understand the conditions under which Buddhism originated and the significance of the terms âtman, karma, nirvâna, etc., not only in their etymologies and definitions but also in their emotional potencies. Nirvâna may correctly be translated by extinction, but the word extinction does not find that same echo in our souls as nirvâna does in the souls of Buddhists to whom it is identical with a radical extinction of evil, sin, iniquity, pain, passion, hatred, and selfishness, which is regarded as the establishment of the highest bliss imaginable. Nirvâna corresponds to the Christian "heaven," yet it would be a mistake to translate it by the word "heaven"; for that which is commonly thought of when we speak of heaven, an eternal jubilee and glorification of God, would not be regarded as the highest bliss by Buddhists.. There may be, and there are, according to Buddhist conceptions, inhabitants of heaven who have not as yet attained nirvâna.

Mr. Warren has translated âtman by "ego," and sometimes by "self," and these words are the best rendering that can be found; but we must always bear in mind that âtman according to the definition of the Brahman philosophy in Buddha's days meant the "self" in the sense of an immutable, eternal soul-essence of man. The âtman was supposed to be that essential part of the soul which remains the same in all changes, and conditions the identity of a person; it was thought to be the soul itself, and was regarded as a distinct being, distinct from all faculties of the soul and distinct also from all soul-activity. Since Buddhism teaches that nothing is stable in this world, it naturally denies the existence of an âtman.

Buddhism, of course, does not deny the existence of an ego in the sense of the existence of self-consciousness. It only denies the metaphysical assumption that

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the unity of man's self-consciousness implies that it is an immutable unit. Man's personality is by Buddha conceived as a compound, which as such is subject to the law of dissolution. While the existence of an âtman in the technical sense of the Brahman psychology is openly and squarely disavowed, the word âtman is nevertheless used in the common significance of "self." Thus we meet in the Dharmapada with such passages as this: "Self is the Lord? Who else should be Lord?" (verse 160), and "a man who controls himself enters the untrodden land through his own self-controlled self" (verse 323). But this "self" is the conscious condition that is expressed in the words "I will," and not the eternal âtman of the Brahman sages, it means "self" as we use the word in common parlance.

The truth is reiterated that all things in this world are compounds, and compounds are subject to the law of dissolution. There is an absolute non-existence of an âtman, of a stable, immutable, soul-substance, and thus Buddhism naturally appears at first sight as nihilistic. It seems to deny all that which according to the usual conception of the soul seems to be of value, and we may wonder why Buddhism appeared acceptable to anybody. Here lies the difficulty of comprehending Buddhism, and even some of its best expounders have failed to understand it properly. Men like Oldenberg look upon Buddhism as an ill-concealed negativism, and when the Buddha refuses to answer certain questions, such as whether the saint will live on after death or be annihilated, Oldenberg believes that the Buddha shirks an answer because he fears to shock the weak-minded hearer who would not be able to stand the full truth which clearly pointed to the reply that a saint would be annihilated after death. Mr. Warren here sees deeper than Oldenberg. Mr. Warren declares in his introductory discourse to Chapter II. that all the questions which Buddha left unanswered touch problems which according to his doctrines were out of court, "for these questions take for granted what he denies, "hence he refuses to give a Yes or No answer, just as any one of us might be ex- "cused for doing, in case any one were to be so impolite as to ask 'Have you left "off beating your mother?' The truth of no one of these theories could be allowed. "They are one and all heretical and incompatible with his doctrine."

Most palpable is this in a chapter taken from the Digha-Nikaya, § 67, pp. 310–311. Here a certain priest wants the question answered, "Where do these four elements, to-wit, the earthy element, the watery element, the fiery element, and the windy element, utterly cease?" He addresses all the sages, kings, and gods, until at last he comes to Brahma himself, and Brahma spoke to the priest as follows: "I, O priest, am Brahma, Great Brahma, the Supreme Being, the Unsurpassed, the Perceiver of All Things, the Controller, the Lord of All, the Maker, the Fashioner, the Chief, the Victor, the Ruler, the Father of All Beings Who Have Been and Are to Be."

The questioner not without a tinge of irony objects to this, saying: "My friend, I am not asking you, are you Brahma, Great Brahma, the Supreme Being, etc.? but I ask you 'Where do these four elements utterly cease?'" Brahma repeats his

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self-glorifying speech three times, and then he takes the questioner by the arm, leads him aside, and speaks to him as follows:

"O priest, these gods of my suite believe as follows: 'Brahma sees all things; "knows all things; has penetrated all things.' Therefore was it that I did not "answer you in their presence. I, O priest, do not know where these four ele- "ments, to-wit, the earthy element, the watery element, the fiery element, and the "windy element utterly cease. Therefore it was a sin and a crime, O priest, that "you left the Blessed One, and went elsewhere in quest of an answer to this ques- "tion. Turn back, O priest, and having drawn near to the Blessed One, ask him "this question, and as the Blessed One shall explain unto you, so believe."

When the priest appears before the Blessed One, the latter says after some ntroductory remarks: "O priest, this question ought never to have been put thus, 'Reverend Sir, where do these four elements, to-wit, the earthy element, the watery element, the fiery element, and the windy element utterly cease?' But this, O priest, is how the question should have been put:

"O where doth water, where doth earth,
And fire, and wind no footing find?
And where doth long, and where doth short
And fine and coarse and good and bad,
And where do name and form both cease,
And turn to utter nothingness?

"And the answer is:

"In consciousness invisible
And infinite, of radiance bright,
O there doth water, there doth earth,
And fire and wind no footing find.
And there doth long, and there doth short,
And fine and coarse and good and bad,
And there do name and form both cease
And utter nothingness become.
And then, when consciousness hath ceased,
This all hath turned to nothingness."

Here Buddha directly states that the question "ought never to have been put thus," which means that the problem is wrongly formulated. The four elements do not utterly cease, but they only do not find a footing in him who has surrendered all attachment, who is free from desire, who has attained nirvâna.

The standpoint which Buddha assumes is so radically different from the standpoint of the Brahmans that their most important problems become irrelevant. The âtman does not exist, and therefore the attainment of nirvâna, consisting in the getting rid of illusion, is not an annihilation, for there is nothing to be annihilated. The reality of the world remains real as before. The first fault is that man thinks

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of himself as an individual âtman which produces the fear of annihilation in death. The question whether man's self, his âtman, is annihilated in death or preserved, has no sense.

Buddha denies on the one hand the reality of an immutable being, of the ὄντως ὄν or Absolute Being such as it was conceived by the Eleatics, and on the other hand he denies the illusoriness of our experience and our deeds. Buddha is not an idealist in the sense that existence should be regarded as a sham. Avoiding the two extremes, he calls his doctrine the "middle doctrine."

But what is the reality that according to Buddha is real? Reality according to Buddha consists in the processes that are taking place, and the reality of living beings consists in their deeds. Reality is doing or acting, as the Germans call it *wirken*. Reality is *Wirklichkeit*. Buddha's doctrine is a strict monism. He does not divide the world into a creator and a creation, a doer and deeds, an enjoyer and enjoyment. Doing exists and the doer is a name given to the doing, as constituted by the groups of existence. There is *karma* but no *âtman*. Thus the world as it exists is a system of actions that are taking place, and every living being is the exact result of its own karma. The evil as well as the good is our own making, and of course every individual must be regarded as the present incorporation of a long history. It is the result of a development in previous lives. Individuals in the proper sense of the word, accordingly, do not exist. The individual as we conceive it is only a temporary incarnation of its own life-history, and it is this doctrine of deeds, or karma, which makes Buddhism so much akin to the theory of evolution.

The term "karma" has two meanings: first, it means deed, that is to say, the performance of definite actions, and then, the character which is constituted through deeds. Deeds leave traces and establish habits by repetition. They constitute what we call character, and while there is no âtman which transmigrates from one individual to another, there is a rebirth of character. The same characters appear again and again and perpetuate the species. In this way they constitute a conception which is not unlike the Christian idea of immortality. Mr. Warren says (p. 210): "It is the character of our friend, his particular set of deeds, or karma, "that we think of as surviving death, and this is exactly what the Buddhists do,— "the only difference being that we claim the existence of an ego. . . . The reader "will see, I think, that the two doctrines are really very similar, if we but leave the "postulation of an ego out of the question."

After these expositions we can explain what the Buddha regarded as the essence of our own being. Man has no right to call anything his own that he will lose again, not his property, not his family, not his slaves, not even his own body, and the present manifestations of his consciousness. His own consists in his karma, in the deeds which he performs, for they survive after death. This doctrine finds expression in the following verses:

"Nor grain, nor wealth, nor store of gold and silver,
Not one amongst his women-folk and children,

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Nor slave, domestic, hired man,
Nor any one that eats his bread,
Can follow him who leaves this life,
But all things must be left behind.

"But every deed a man performs,
With body, or with voice, or mind,
'Tis this that he can call his own,
This with him take as he goes hence.
This is what follows after him,
And like a shadow ne'er departs.

"Let all, then, noble deeds perform,
A treasure-store for future weal;
For merit gained this life within,
Will yield a blessing in the next."

Buddha's doctrine is, in one word, anti-metaphysical. He denies the thing-in-itself, the âtman, the eternal, as a substance or entity. There is nothing permanent except the eternal truth that can be gained by enlightenment.

While Buddha's system was a definite philosophy which in spite of the many corruptions of the Pâli texts is in its outlines very clearly set forth, we cannot help admiring the practical spirit of the Great Teacher, the influence of which lasted for millenniums and will probably never be obliterated in his followers, even where they have degenerated and are in utter ignorance of the significance of his doctrines. Mr. Warren says of the Buddha in his introductory discourse to the first chapter: "In reading the Pâli Scriptures one is impressed with the strong personal "influence exercised by the Buddha over the hearts of his followers. He was re- "garded not as a mere formulator of dry metaphysical propositions, but as a very "wise and compassionate friend of his fellow-men. He was full of tact, and all "his ways were ways of peace. To allay discord he would tell a little story or fable "with a moral, and his epithet for one of whom he disapproved was merely 'vain "man.' Anger, in fact, had no place in his character, and the reader of this book "will find that it had equally none in his religio-philosophic system." P. C.

BHAKTI SATAKA. By *Râma Chandrabhârati*. With a Commentary by the *Rev. C. A. Seelakkhandha Thera*. Darjeeling: Buddhist Text Society of India. 1896.

The *Bhakti Sataka*, or "Hundred Lines of Faith," written in the beginning of the thirteenth century A. D. by Sri Râma Chandrabhârati, a pupil of Sri Rahula Sangha Raja, illustrates the virtues of the Buddha. The Rev. C. A. Seelakkhandha, of the Sailabimbarama Vihara at Dodauduwa, Ceylon, has undertaken to edit the *Bhakti Sataka* with a commentary, trusting that on account of its excellent style and the information it contains on Buddhism the poem will prove a very useful Sanskrit Reader for beginners.

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The Reverend Seelakkhandha says in the preface:

"As it is my earnest desire to make the *Bhakti Sataka* useful to those who are, "at present, only imperfectly acquainted with Buddhism, I have written this com- "mentary called Ratnamala to enable them to easily understand the real meaning "of the text in accordance with the rules of Buddhism. In many instances, I have "quoted from other works on Buddhism. The author, Pandit Rama Chandrabha- "rati, having thoroughly acquainted himself with the tenets of Lord Buddha and "also with the accepted interpretation of his doctrine, and having accepted the "truth, as it is the duty of every learned man, and also having realised that there "is nothing more important than happiness in our next birth, followed the religion "of his conviction." κρς.

THE LITERARY STUDY OF THE BIBLE. An Account of the Leading Forms of Literature Represented in the Sacred Writings. Intended for English Readers. By *Richard G. Moulton, M. A.* (Cambr.), *Ph. D.* (Penna.), Professor of Literature in English in the University of Chicago. Boston: D. C. Heath & Co. 1895. Pages, 533.

THE MODERN READER'S BIBLE. A Series of Works from the Sacred Scriptures, Presented in Modern Literary Form. Edited, with an Introduction and Notes, by *Richard G. Moulton.* New York: Macmillan & Co. 1896. In small 18 mo. Volumes. Cloth, extra. Price, 50 cents each.

There is no need of the apology which Professor Moulton prefixes to his introductory remarks to the first of these works, touching its being a new increase to the number of books on the Bible. The work which he has attempted is so important, and the fruits which it is likely to bear are so tremendous, that one wonders the task was not attempted in English long before, although of a magnitude that would naturally repel anybody but a trained and indefatigable scholar. His work has been based upon the belief, "that the natural interest of sacred literature is considerably impaired by the form in which the Bible is usually read." The proper arrangement of the printed page, the distinction between prose and verse, the insertion of the names of speakers in dialogue, the assignment of characteristic titles, and the inclusion of a mass of totally diverse kinds of literature higgledy-piggledy in a single volume are matters of convenience and inconvenience which have never been considered in the editing of Bibles, and the lack of which, or the presence of which, has rendered the reading of Scripture if not a positive bore yet highly repellent to all except the most devout and untiring minds. The aversion of the average cultured reader to perusals of Scripture is certainly not based upon its lack of intrinsic interest. No one who has read such glowing and impassioned treatments of the literary prophets as are to be found in books like Cornill's *Prophets of Israel* can for a moment doubt the importance and fascination of the history and literature of this people. We may go farther than Professor Moulton and say that the fewness of those to whom the Bible appeals as literature is not due *in part*

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but is due almost *entirely* to the forbidding form in which we allow the Bible to be presented to us. "Let the reader imagine the poems of Wordsworth, the plays of "Shakespeare, the essays of Bacon, and the histories of Motley to be bound to- "gether in a single volume; let him suppose the titles of the poems and essays cut "out, and the names of speakers and divisions of speeches removed, the whole di- "vided up into sentences of a convenient length for parsing, and again into lessons "containing a larger or smaller number of these sentences. If the reader can "carry his imagination through these processes, he will have before him a fair "parallel to the literary form in which the Bible has come to the modern reader."

As the author well says, here is common ground—this literary appreciation of Scripture—upon which the devout believer, the free thinker, the reverent scholar, and even opposing schools of criticism may meet. He has not attempted to embrace in his work all of the wide field denominated the literary study of the Bible, but has devoted most of his research and thought to one single aspect of the subject—*the treatment of literary morphology*: "how to distinguish one literary composition "from another, to say exactly where each begins and ends; to recognise Epic, Lyric, "and other forms as they appear in their biblical dress, as well as to distinguish "literary forms special to the Sacred writers." Hence has sprung the sub-title of the book—"An Account of the *Leading Forms of Literature* Represented in the Sacred Writings." The whole thus works up to what the author has called "A Literary Index of the Bible," ranging from Genesis to Revelation, and including the Apocryphal books of Wisdom and Ecclesiasticus. Using this Index, Professor Moulton says: "A student might mark these divisions and titles in the margin of his Revised Version, and so do for his Bible what the printer would do for all literature." The preferable plan, however, would be for the student to use the single volumes of Professor Moulton's *Modern Reader's Bible Series*, where this work has been done upon the actual printed page in excellent letter-press and typography.

Criticism and religious interpretation Professor Moulton leaves aside. For a literary appreciation, say of Deuteronomy, it is a matter of no import, he contends, whether this work was a composition of Moses or whether it was a fiction of the age of Josiah. Indifferent, however, as are the results of the Higher Criticism to a purely literary appreciation of the Bible, it is interesting to note that the literary treatment has often weighty suggestions to offer to the historical treatment. As a characteristic example Professor Moulton chooses a group of verses in the Book of Micah where even a casual reader remarks a sharply contrasted change of tone. Wellhausen sees in this changed tone evidence of a new composition. "Between verse 6 and verse 7," he says, "there yawns a century." "What really yawns between the verses," retorts Professor Moulton, "is simply a change of speakers." On the obvious assumption that the latter part of Micah is dramatic, all, in the Professor's view, is explained.

Another point of difference between the historical and literary treatments has regard to the "genuineness" of compositions. In the Higher Criticism "interpo-

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lations" and "accretions" are frequently alluded to as something illegitimate. Professor Moulton rejects this imputation. In floating literature, such as the Hebrew literature largely was, there is no analogue of the modern idea of "originality." "My contention is that, whatever may be the truth as to dates, all the sec- "tions of such a poem as *Job* are equally 'genuine.' And as a matter of literary "analysis, I find the speeches of Elihu and the Divine Intervention, from whatever "sources they may have come, carrying forward the previous movement of the "poem to a natural dramatic climax, and in literary effect as striking as any part "of the book."

It remains for us to mention one additional point upon which Professor Moulton lays special emphasis—*the place in liberal education* of the Bible as literature. His plea on this head rises to the pitch of eloquence. He condemns the Mediæval narrowness and Renaissance paganism which compels our youth to draw their life's inspiration from the sensuous ideals of Greek and Roman antiquity, while neglecting the grand moral productions of Hebrew thought. "It is surely good "that our youth, during the formative period, should have displayed to them in a "literary dress as brilliant as that of Greek literature—in lyrics which Pindar can- "not surpass, in rhetoric as forcible as that of Demosthenes, or contemplative "prose not inferior to Plato's—a people dominated by an utter passion for right- "eousness, a people whose ideas of purity, of infinite good, of universal order, of "faith in the irresistible downfall of all moral evil, moved to a poetic passion as "fervid, and speech as musical, as when Sappho sang of love, or Æschylos thun- "dered his deep notes of destiny."

There is no gainsaying the wisdom and appositeness of this plea, and it is commendable that this ethical consideration, aiming at the formation of a nation's habits and thoughts, should in the production of the book have outweighed, or at least counterbalanced, matters of purely æsthetical and literary import. For literature and art are the handmaids, not the objects of life.

The work itself is divided into five "Books," exclusive of Introduction and Appendices. The Introduction takes up the Book of Job as a typical example and shows the various kinds of literary interest illustrated by it. It is found to contain specimens of epic, lyric, and dramatic composition, to have a philosophical and scientific interest, an interest of prophecy, and an adscititious interest in respect to rhetoric and versification. These "interests," and others, are then developed and applied in the six Books of the work, which bear respectively the titles: "Literary Classification Applied to the Sacred Scriptures;" "Lyric Poetry of the Bible;" "Biblical History and Epic;" "The Philosophy of the Bible, or Wisdom Literature;" "Biblical Literature of Prophecy;" "The Biblical Literature of Rhetoric." The Appendices are exhaustive and valuable, and give much needful material for the general reader in his study of the literary morphology of the Bible.

On the whole, *The Literary Study of the Bible* forms an excellent companion-book and guide to the little volumes which are issuing in *The Modern Reader's*

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Bible Series, published by Macmillan, and arranged and edited by the same author. In this series the following, composing the Wisdom series, have already appeared: "The Proverbs;" "Ecclesiasticus;" "Ecclesiastes—Wisdom of Solomon;" and the "Book of Job." Each is provided with a special introduction, table of contents, prologues, epilogues, annotations, etc.,—everything in the style of a modern book. Their handy form, the elegance and taste displayed by both editor and publisher make them unusually attractive volumes.

THOMAS J. MCCORMACK.

THE UNITED STATES OF AMERICA. 1765–1865. By *Edward Channing, Ph. D.*, Assistant Professor of History in Harvard University. Cambridge [England]: University Press. 1896. [Cambridge Historical Series.]

So much has been said of the extent to which present relations between America and England are affected by instructions given in school concerning their old disputes and conflicts, that opportuneness will be at once conceded to the present volume. It is written especially for English readers, and comes with every guarantee of competency and fairness, as well as with the promise of enabling Englishmen to review, from the American standpoint, a century in which the histories of the two nations can hardly at any point be disconnected. The century is happily chosen. The first chapter, of forty pages, is a condensed and valuable prologue in which the colonial conditions and events which prepared the arena and led on to the struggles for nationality, are presented in broad outlines. Between the spring of 1765, when the Stamp-Act was imposed by Parliament, and the spring of 1865, when the restored Union was cemented by the blood of President Lincoln, lies the continuous history of American nationality, and Dr. Channing has shown good workmanship in compressing this century of events in the space of three hundred pages. Of course in that space, determined, no doubt, by editorial exigencies, some salient matters are necessarily omitted; but some suppressions are questionable. The proceedings of Governors Tryon in North Carolina and Dunmore in Virginia in fanning popular rage might at least have been referred to, though less striking than the case of Hutchinson in Massachusetts who was the first to put "independence" into the New England head. In trying to suppress the Tea troubles, he "rashly began an academic discussion as to the rights and duties of the colonists, proving conclusively that the position assumed by the colonists was unsound and that they must either submit or become independent." Dr. Channing regards the Stamp Act as constitutional but inexpedient. He is perhaps a little too tender in passing over the arrogant attitude of the English government towards American petitions, and the gratuitous ungraciousness which accompanied the repeal of the Stamp Act with a Declaratory Act affirming the right "to bind the colonies and people of America, subjects of the crown of Great Britain, in all cases whatsoever." Lord North told George III. that it was this Act, mere waste paper, which hurt the Americans most.

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As a rule Dr. Channing avoids more than could be wished the sore points in his story for English readers, but in one instance we find a curious example of the permanence of unhistoric traditions even in seats of learning. Thus, in writing of the surrender of Burgoyne (page 92), he says:

"The Saratoga Convention stipulated that British soldiers should embark on "transports to be provided by their government, and should not serve again in "North America until exchanged. Weakness or good nature had induced Gates to "grant these terms. The convention was not carried out in good faith by either "party to it. The public property was not again given up by the British, and a "demand for a descriptive list of the prisoners drew from Burgoyne some ill-"advised words to the effect that the Convention had been broken by the Ameri-"cans. These things, trifling in themselves, may be held, in some slight degree, "to justify the Continental Congress in its refusal to ratify the Convention. The "real reason, however, for that action seems to have been a natural fear on the "part of the French government lest the Convention troops should be used against "them in Europe. On moral grounds this action of Congress cannot be defended, "but legally it was justifiable."

Documents cited in Fonblanque's Life of Burgoyne show that Gates's terms were the alternative of a life-and-death struggle; that there was not the slightest departure from good faith on the British side; and the justice of Burgoyne's "ill-advised words" is now justified by an authority which relieves the French of all participation in the matter. This authority is no less than that of Washington himself who, in a letter to the President of Congress (November 26, 1777), reminds him that so soon as the surrendered troops reach England, "the most scrupulous and virtuous observance of the convention will justify the ministry in placing them in garrison, and sending out others to reinforce General Howe." This letter will be found in Ford's "Writings of Washington," Vol. VI., page 225, and in the same volume, pages 245–248, 283, 293, 369, may be found further letters and notes of the means by which fulfilment of the convention was avoided.

Dr. Channing is generally careful in his treatment of international points, of later periods, so far as England is concerned, though, he occasionally makes questionable remarks. Thus, with regard to the Ashburton treaty it is said (p. 227): "It appears, however, that had Webster been correctly informed, he need not have yielded as much as he did as to the north-eastern boundary of Maine." The Secretary of State (Webster) had in his desk the red-lined map used by Franklin at the treaty of 1783, which coincided with the boundary claimed by England, and it is doubtful whether he would have got so much had this evidence been known to Lord Ashburton. (*Parl. Debates*, LXVII, 1183.)

The sixty-six pages allotted to the late Civil War are written with fairness to the South, but not always with due recognition of the small wires on which hung great weights, "The 'Horror of Fredericksburg'" (December 13, 1862), says Dr. Channing, "cost the Union army thirteen thousand men," but it might have been

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added that the whole army might have been destroyed but for Lee's reluctance to shell the beloved little town, a tenderness which permitted Burnside's army to cross the Rappahannock on pontoons during the night. "The people of the western part of Virginia," says our author, "had no sympathy with secession. They were outvoted in the State Convention by the delegates from the eastern part of the State." But a majority of the eastern delegates were also opposed to secession, and the Virginia Convention was carried for secession solely by President Lincoln's proclamation of April 15, 1861, calling upon the States, Virginia included, for seventy-five thousand militiamen to march against the seven States which had seceded. That demand on the Virginians to march against their Southern brethren came while the State Convention was in session, and turned the Unionist majority into a minority. Had the President's proclamation been delayed a day or two, at most, Virginia would have adhered to the Union, for another Convention was impossible. It is doubtful whether without Virginia the Confederacy could have made much headway, and it is certain that our historian would not have had to record the startling figures that the war, in its two thousand four hundred actions, cost the whole country a million lives, and two thousand million pounds sterling. This may appear a moderate cost for what Dr. Channing regards as the result—settlement of the "two questions of slavery and nationality"; but as he declares the interpretation of the Constitution, as to the right of secession, as "historically uncertain," it seems strange that among the constitutional amendments that have grown out of the war none should affirm the inviolability of the Union.

Dr. Channing's little book is so well written, and in some matters so instructive, that with some revision and amendment in the light of historic justice, it might serve for educational uses. Unfortunately the Professor does not escape from the ruts worn by some of his predecessors, even though their traditional errors have been revealed by recent investigators. Prejudice is apt to be tyrannous in proportion to the importance of the things involved; and in American history especially the most vital questions are connected with certain eminent men on whom the historian's judgment cannot be pronounced uncritically without misleading his readers in matters more important than any individual. A Harvard professor—shall we say a Channing?—might be expected to speak with discrimination even of Tom Paine; but if that were too much to ask, surely he should not write of any historic figure in the following way: "Charles Lee, a renegade Englishman, committed treason many times; and of Horatio Gates, a recent immigrant to Virginia, it is difficult to speak with calmness. He was self-sufficient and cowardly; and he treated his subordinates with a spirit of unfairness and jealousy hardly to be conceived." If Dr. Channing possesses fresh information concerning these men, it should have been here adduced; so far as the facts have been published, it is left doubtful whether Lee was ever disloyal at heart to the American cause, and the charge of cowardice against Gates has never been proved. He did not anticipate his victory at Saratoga, and had prudently prepared means for retreat if necessary,

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but we cannot think much would ever have been heard of this, or of Charles Lee's "treason," if the two men had not been accused of slighting Washington. Of Washington Dr. Channing says: "As a man, and as a leader of men, George Wash-"ington occupies an unique position among historic personages of ancient and "modern times. Other men have been more brilliant than he; but in no other "man have considerable abilities been combined with absolute honesty and stead-"fastness of purpose as they were in him." With such a view of the chieftain it must require exceptional self-restraint not to offer up promptly on his altar any one on whom he frowned, and our author's failures to exercise this self-restraint mar his history at several important points. Thus, he says of the Minister of the French Republic (1793):

"Landing at Charleston, Genet at once began the fitting out of privateers, and "seemed disposed to use the soil of the United States as if it were French territory. "Jefferson advised him to be moderate in his actions; but Genet not only broke "promises he had made to the Secretary of State, but he defied the Government. "Washington, after mature deliberation, decided to regard the treaty of 1778 as "not binding in this case. . . . Genet then appealed to the people against Wash-"ington" (p. 148).

Whether Genet broke any promises to the Secretary of State (Jefferson), or the latter broke his promises to Genet, is a question of veracity between the two men, and as our author describes Jefferson as "a political inventor," and "work-ing in the dark," it would seem that the notoriously frank and undiplomatic Genet might fairly claim his verdict. But as to the alleged appeal of Genet to the people against Washington, it was not charged at the time, but only that he had been heard to threaten that he would do so. This charge was made by John Jay and Rufus King, who were compelled to name Mr. Dallas as the man who heard the threat, and this drew from Dallas a complete denial of their story. The documents were all printed in the *American Historical Register*, November 1866.

Edmund Randolph, on whom the crisis of Washington's presidential career turned, is not even mentioned in Dr. Channing's book!

Another man unfortunate enough to fall under Washington's disapprobation was Monroe, who was the United States Minister in Paris during the excitement there over the British Treaty of 1795. "Instead," says Dr. Channing, "of trying to reconcile the French government to Jay's treaty, he increased the irritation which was felt in France by his petulant and undignified conduct, and returned to the United States in disgrace." On the contrary, Monroe, despite his dislike of the Treaty, had almost brought the French government to tolerate it, and it was his sudden recall that undid his work and brought France and the United States to the verge of war. So far from returning to America in disgrace, Monroe returned to become President of the United States, and our author himself is constrained to say, "Monroe's first administration was in many respects the most successful in

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the history of the country," and that "the close of Monroe's (second) administration was in every respect the end of the "Era of Good Feeling."

These lapses are not numerous in Dr. Channing's book, but they are sadly significant. They could not have been made by any writer who had mastered even the published documents recently brought to light concerning Washington, Monroe, Edmund Randolph, Jefferson, Thomas Paine, much less searched into the mass of unpublished documents in our State archives. It is distressing to observe a similar lack of original research in most of the volumes which profess to deal in any compendious way with American history. McMasters, John Fiske, and now Dr. Channing, seem to think that our history can be written within the walls of their respective libraries, and do not appear to be aware that they are dealing summarily with facts, traditions, situations, affecting other countries, and even with the international relations of these countries at the present moment. A similar fault pervades most of the historical works of England and France, which are largely indictments of each other, based on partial investigations. There is great need of a real and thorough work, written by some English or American scholar, narrating with absolute impartiality the international history of America, England, and France, and without any bias of national pride in great names,—such as Washington, Franklin, Jefferson, Hamilton, Burke, Pitt, Fox, Napoleon, or any other conventionalised hero or bogey. These men had their virtues and their faults, and by both history was moulded; and the historian, occupying the House of the Interpreter, should never descend into the arena of the partisan conflicts whose meaning he is to unfold and whose results he is to trace out.

What young and brave student is there in the West who will consecrate himself to the task of giving to America and to Europe a history that exact thinkers and judicial patriots in both hemispheres shall welcome, and which may train the more cosmopolitan generation whose motto will be: "The world is my country, to do good my religion"?

M. D. CONWAY.

GRUNDRISS DER PSYCHOLOGIE. By *Wilhelm Wundt*. Leipsic: Wilhelm Engelmann. 1896, Pages, 392.

The psychological views of Professor Wundt are so well known, and his works on this and cognate branches so widely circulated, that it is unnecessary to speak of the character and tendency of his present concise *Rudiments of Psychology*, which after long solicitations he has at last been induced to give to the world. It will be sufficient to characterise its position with regard to the great psychologist's other works. The purpose of the *Rudiments* has been a twofold one: first, to place into the hands of Professor Wundt's pupils an outline of his oral course in psychology, an end which will meet the needs of nearly all students of the subject, and secondly, to provide for the general reader of culture, who wishes to get some conception of the work in modern psychology, a systematic survey of its most important results and theories. In consequence of this simplicity and limitation of pur-

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pose, the exposition has been restricted to the simplest and most important facts, and all explanation of apparatus and experimenting has been omitted. Naturally, Professor Wundt has laid at the foundation of his treatment the views which he himself regards as the best, but he has not omitted to characterise briefly the principal psychological doctrines which diverge from his own.

We have now from Professor Wundt's pen three formal and important works on psychology proper. The first is his celebrated voluminous treatise on the *Elements of Physiological Psychology*, which, if it has not been nominally translated, has yet been partially paraphrased in American text-books. This treatise was devoted to the exposition of the methods for applying the procedures of physical science to the investigation and analysis of psycho-physical facts, and of the results which had been reached by the application of those methods. General considerations, of course, were here forced into the background. The second work is the new edition of his *Lectures on Human and Animal Psychology*, which has been translated into English by Professors Titchener and Creighton, of Cornell. This is a more popular attempt at giving the character and purpose of experimental psychology, but at the same time it includes discussions of more general philosophic import. In other words, the first work laid greatest stress upon the relations of psychology to physiology, the second emphasised principally the philosophical points of view, while the present work or *Rudiments* is devoted to the presentation of psychology in that special orderly form and systematic arrangement which is the outcome of Professor Wundt's experience and judgment on the methodology of the subject. The author himself regards it in this point of view as a helpful supplement to all his previous psychological works and especially to his formal views, as stated in the section entitled "The Logic of Psychology," in the second volume of the second part of the second edition of his Logic.

The treatment itself falls under four heads exclusive of the Introduction, where the problems, theories, and methods of psychology are discussed. The first head is called "Psychical Elements," where simple sensations and feelings are considered. The second is called "Psychical Compounds" (*Gebilde*), where the subjects of intensive and spatial percepts, temporal, visual, and auditive percepts, composite feelings, emotions, and volitions are discussed. The third bears the title of the "Relations between the Psychical Compounds," and treats of consciousness and attention, association, memory, apperceptive combinations, psychical states, etc. The fourth is entitled "Products of Psychical Evolution." Here are emphasised the psychical attributes of animals, the psychical evolution of the child, the evolution of intellectual communities, embracing language, mythology, and customs. The last and fifth head bears the title of "Psychical Causality and its Laws." The notion of the soul, the psychological laws of relation, and the psychological laws of evolution are here dwelt upon. The whole comprises about 384 pages, making the exposition, thus, a model of conciseness, as it is also with respect to the richness and importance of the material offered. μκρκ.

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ON MEMORY, AND THE SPECIFIC ENERGIES OF THE NERVOUS SYSTEM. By *Prof. Ewald Hering*. Chicago: The Open Court Publishing Co. Pages, 50. Price, 15 cents.

Students have now accessible in a cheap form both the classical memoir of Hering "On Memory," and his equally well-known article on "The Specific Energies of the Nervous System. Hering has rarely unbent himself to popular and untechnical expression; in fact, with the exception of these two essays, we know of hardly another case of his having done so in all his published works. But he is certainly a master in the art of giving abstruse results in concise and simple form. More of such work would have been a boon to the semi-scientific world, and it is safe to say that much of his high reputation, even among inquirers, or at least among such as have not worked in just his specialty, is due to the success of the essays comprised in this little book. ω.

L'ANNÉE PSYCHOLOGIQUE. Publiée par MM. H. Beaunis et A. Binet. Paris: Félix Alcan. 1896. Pages, 1010. Price, 15 fr.

The Messrs. Beaunis and Binet are to be congratulated upon the success of the undertaking born into life in this portly volume. The *Année Psychologique* counts among its collaborators Professor Ribot of the Collège de France, M. Victor Henri, now engaged in the Laboratory of Wundt, at Leipsic, MM. Azoulay, Biervliet, Bourdon, Chaslin Courtier, Flournoy, Forel, Gley, Passy, Philippe, Xilliez, and Mlle. Sczawinska. The laudable purpose of the *Année* has been (1) to present a series of original and representative memoirs by leading psychologists; (2) to present an account of the work done in the Laboratory of Physiological Psychology at Paris; (3) to present general systematic synopses of the work done in certain extremely special departments of psychological research and thought, the choice of which seems largely dictated by the taste of the collaborators; (4) analytical notices of the main works which have appeared in psychology and cognate subjects; (5) and lastly, a biographical index of everything which has appeared upon psychology or upon any subject relating to psychology during the entire preceding year (1895). This last list includes 1394 titles. The original memoirs are by (1) Ribot, "Abnormal Morbid Characters;" (2) Forel, "Bird's-eye View of Comparative Psychology;" (3) Flournoy, "On Time of Reading and Omission;" (4) Bourdon, "On Intellectual Phenomena;" (5) Gley, "On Conditions Favoring Hypnosis;" (6) Biervliet, "Illusions of Weight." In the accounts of special departments of research we have an article by Azoulay, who is something of a spelling-reformer, on "Histological Psychology;" an article by V. Henri on "The Space-Sense of the Skin;" by J. Passy, on "Olfactive Sensations;" by A. Binet and V. Henri, on "Individual Psychology," and lastly, one by V. Henri, on "The Calculation of Probabilities in Psychology."

The labor involved in the compilation of this large work has been enormous and its convenience will be appreciated by all students of psychology. Annual sub-

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scriptions to the *Année Psychologique* costs for foreign countries 15 francs, and may be addressed to M. Binet, at the Sorbonne, Paris. μ.

THE PSYCHOLOGICAL INDEX, No. 2. A Bibliography of the Literature of Psychology and Cognate Subjects for 1895. Compiled by *Livingston Farrand*, Columbia College, and *Howard C. Warren*, Princeton University. New York and London: Macmillan & Co. Price, 75 cents.

PRINCETON CONTRIBUTIONS TO PSYCHOLOGY. Reprinted from the *Psychological Review*. Edited by *J. Mark Baldwin*. Princeton: The University Press. January, 1896. Pages, 49. Price, 50 cents.

The number of titles of the various books, pamphlets, articles, and utterances connected in any way with the subject of psychology for the year 1895, amounts, according to this issue of *The Psychological Index*, to 1394. This number agrees with that given in the bibliographical table of the *Année Psychologique* of MM. Beaunis and Binet. The two lists appear in fact to be identical, and were no doubt compiled in concert. It was certainly a deserving task, and that issued by the *Psychological Review* is in excellent typographical form.

The second brochure listed above is No. 3 of the *Princeton Contributions to Psychology*, being a reprint from the *Psychological Review*. It contains three articles: I. "The Perception of two Points not the Space-Threshold," by Guy Tawney; II. "The Origin of a Thing and its Nature," by J. Mark Baldwin; III. "Something More About the 'Prospective Reference' of Mind," by W. M. Urban. The *Contributions* are to appear semi-annually.

In the same group we may mention a paper on *Association* (56 pp.), by Mary Whiton Calkins, which appears as a monograph supplement to *The Psychological Review*. μ.

STUDIES FROM THE YALE PSYCHOLOGICAL LABORATORY. Edited by *Edward W. Scripture, Ph. D* Vol. III. New Haven, Conn.: Yale University. 1895. Pages, 109. Price, $1.00.

The *Studies* for 1895 open with a long article on "Measurements of Illusions and Hallucinations in Normal Life," by C. E. Seashore. This is followed by some "Studies of Fatigue" by John M. Moore, and by "Some Experiments on the Reaction-Time of a Dog" by Edward M. Weyer. It closes with a description of "Some New Apparatus" by E. W. Scripture. ρμ.

AN EXAMINATION OF WEISMANNISM. By *George John Romanes, F. R. S.* Chicago: The Open Court Publishing Co. 1896. Pages, 221. Price, 35 cents.

This is one of the latest additions to the Religion of Science Library. It is printed upon the same paper as the cloth edition and also contains a fine photogravure portrait of Weismann as its frontispiece. Romanes's *Examination of Weismannism* was to have formed part of his work *Darwin, and After Darwin*, but

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as his criticism grew under his hands he determined to publish his *Examination* separately. He has considered only the theories which Weismann has reared upon the fundamental postulate of the non-inheritance of acquired characters having reserved for Part II. of his *Darwin, and After Darwin*, which has since appeared, the question of the validity of that postulate itself. The glossary of technical terms is a helpful addition to the work. ω.

STUDIES IN THE PSYCHOLOGY OF RELIGIOUS PHENOMENA: The Religious Motive, Conversion, Facts, and Doctrines. By *James H. Leuba*, Fellow in Psychology at Clark University. Worcester, Mass. 1896. Pages, 76.

Consonantly with the practical trend of modern research, which has also affected psychology, Mr. Leuba proposes here to take up the manifestations of religious life which have hitherto been ignored. He says: "If religion has any "reality, it must perforce express itself in psychic and physiological phenomena. "The work of a true Science of Religion, as we understand it, is to find out what "these subjective manifestations are, and then to treat them as it would any other "psychic fact." His method has been the presentation of extracts from well-known religious documents, in the light of which he analyses such states of mind and body as conversion, surrender, justification, faith, etc. The present pamphlet, which is mainly concerned with psychic facts, is to be followed by a concluding essay which will be chiefly theoretical and speculative, and will point out the possible physiological correlates of the phenomena here considered. μ.

ENDOKANNIBALISMUS. By *Dr. Rudolf S. Steinmetz*. Wien: Anthropologische Gesellschaft. 1896. Pages, 60.

This brochure is an extract from the Proceedings of the Anthropological Society of Vienna and will be interesting to ethnologists who are occupied with the study of anthropology. By endocannibalism is understood the practice of eating members of one's own race as distinguished from members of another. The study of cannibalism generally suffers from the drawback that there are few ethnologists who are personally desirous of investigating the facts. Long sojourns among anthropophagi are attended with dangers which few are willing to risk.

DIE DENKSCHÖPFUNG UMGEBENDER WELT AUS KOSMOGONISCHEN VORSTELLUNGEN IN CULTUR UND UNCULTUR. By *A. Bastian*. Berlin: Ferd. Dümmler. 1896.

Dr. Bastian's works follow one another in rapid succession and in undiminishing bulk, so that we have constant occasion to wonder at the inexhaustible resources of his erudition and world-wide experience. The present book is a comparative survey of the cosmogonic conceptions of civilised and uncivilised people. The discussion embraces almost every possible aspect of the world's thought on creation, and on everything relating to creation: it would be impossible to suggest a subject in this connexion that has not been broached. As we have had occasion to remark

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before of Dr. Bastian's other works, this book, too, is in absolute want of an analytical index. Several plates and tables are appended. μ.

DIE LEHRE VON DEN SPEZIFISCHEN SINNESENERGIEN. By *Dr. Rudolf Weinmann*. Hamburg and Leipsic: Leopold Voss. 1895. Pages, 96. Price, M. 2.50.

WIRKLICHKEITSSTANDPUNKT. Eine erkenntnistheoretische Skizze. By *Dr. Rudolf Weinmann*. Hamburg and Leipsic: Leopold Voss. 1896. Pages, 37. Price, M. 0.80.

The work of Dr. Weinmann is an attempt at a historical, systematic, and critical exposition of the doctrine of the specific energies of the nervous system. He has divided his booklet into three parts, the first giving in general outlines the origin and history of the idea of the specific energies, the second a systematic critical statement of the principle, and the third an epistemological discussion of its scope and import. The author pretends to advance no new facts regarding the nature of the specific energies as such; he believes, however, that they require explanation, being by their very nature a renunciation of explanation; and finally, it is his opinion that the doctrine has merely a physiological interest, being entirely bereft of epistemological import. We may refer our readers who are not acquainted with German, and who wish to obtain a clear notion of what the specific energies mean, to the admirably clear exposition of Prof. Ewald Hering which was recently published in the *Religion of Science Library*.

In the second pamphlet Dr. Weinmann discusses certain epistemological problems in the light of a criticism of Kant's subjective realism. μ.

ERRATUM.

On page 322 of the April, 1896, *Monist*, line 10 from the bottom (article, Mach's *Stereoscopic Application of Röntgen's Rays*), "*by* the intermediation of photography" should read "*without* the intermediation of photography."

It was the object of the experiment proposed by Professor Mach, not to use photography, but to do away with photography. In the meantime, a stereoscopic picture of a human hand, with the bones, and with colored liquid injections in the blood-vessels, has, at the suggestion of Professor Mach, been taken by Professor Pfaundler of the University of Graz.

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PERIODICALS.

THE PSYCHOLOGICAL REVIEW. VOL. III. No. 3.

STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF THE UNIVERSITY OF CHICAGO. (I.) Reaction-Time; A Study in Attention and Habit: *James Rowland Angell* and *Addison W. Moore*. (II.) A Study of Visual and Aural Memory Processes: *Lewis Grant Whitehead*.—STUDIES FROM THE HARVARD PSYCHOLOGICAL LABORATORY. (V.) The Æsthetics of Simple Forms: *Edgar Pierce*. A New Perimeter: *James E. Lough*.—THE ACCURACY OF RECOLLECTION AND OBSERVATION. By *Frederick E. Bolton*.—DISCUSSION, ETC.—(New York: Macmillan & Co., 66 Fifth Avenue.)

THE AMERICAN JOURNAL OF PSYCHOLOGY. Vol. VII. No. 3.

A STUDY IN THE PSYCHOLOGY OF RELIGIOUS PHENOMENA. By *James H. Leuba*.—COLOR-SATURATION AND ITS QUANTITATIVE RELATIONS, By *August Kirschmann, Ph. D.*—MINOR STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF WELLESLEY COLLEGE.—A STUDY OF DREAM CONSCIOUSNESS. By *Sarah C. Weed, Florence M. Hallam*, and *Emma D. Phinney*.—A LABORATORY COURSE IN PHYSIOLOGICAL PSYCHOLOGY, VI. By *Edmund C. Sanford*.—PSYCHOLOGICAL LITERATURE.—NOTES.—(Worcester, Mass.: J. H. Orpha.)

THE PHILOSOPHICAL REVIEW. Vol. V. No. 3.

LOTZE'S MONISM. By *F. C. S. Schiller*.—THE CATEGORY OF SUBSTANCE. By *Prof. Walter Smith*.—SOME ASPECTS OF HEGEL'S PHILOSOPHY. By *Prof. Hiralal Haldar*.—THE LIMITATIONS OF THE INTROSPECTIVE METHOD IN ETHICS. By *Dr. Frank C. Sharp*.—BOOK REVIEWS, ETC.—(Boston, New York, Chicago: Ginn & Co.)

MIND. NEW SERIES, No. 18.

THE CONCEPTION OF IMMORTALITY IN SPINOZA'S *Ethics*. By *A. E. Taylor*.—PLATO'S EARLIER THEORY OF IDEAS. By *R. P. Hardie*.—SENSE, MEANING, AND INTERPRETATION. (II.) By *V. Welby*.—CHARACTER AND THE EMOTIONS. By *Alexander F. Shand*.—DISCUSSIONS, ETC.—(London and Edinburgh: Williams & Norgate.)

REVUE PHILOSOPHIQUE. Vol. XXI. Nos. 3, 4, 5, and 6.

MÉMOIRE ET RECONNAISSANCE (I.) By *H. Bergson*.—LA VIE ET LA MORT. II. LES MÉTAZOAIRES (Concluded). By *F. le Dantec*.—LE LOBE OCCIPITAL ET LA VISION MENTALE. (Concluded.) By *J. Soury*.

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GÉNÉRALISATION ET INDUCTION (I.) By *G. Fonsegrive.*—MÉMOIRE ET RECONNAISSANCE (Concluded). By *H. Bergson.*—CIVILISATION ET NÉVROPATHIE. By *Ch. Féré.*

NÉCESSITÉ D'UNE INTERPRÉTATION PSYCHOLOGIQUE ET SOCIOLOGIQUE DU MONDE. By *A. Fouillée.*—L'ÉVOLUTION CHIMIQUE DE L'ESPÈCE. By *F. Le Dantec.*—GÉNÉRALISATION ET INDUCTION (Concluded). By *G. Fonsegrive.*

RECHERCHES EXPÉRIMENTALES SUR LA JOIE ET LA TRISTESSE. I. LA JOIE. By *G. Dumas.*—DE L'INVOLUTION ET DE L'ORDRE RESPECTIF DES IDÉES, RÉVÉLÉS PAR LE LANGAGE. By *R. de la Grasserie.*—LA MAIN, LA PRÉHENSION ET LE TOUCHER. By *Ch. Féré.*—ANALYSES ET COMPTES RENDUS, ETC.—(Paris: Félix Alcan.)

REVUE DE MÉTAPHYSIQUE ET DE MORALE. Vol. IV. Nos. 2 and 3.

RECHERCHE D'UNE MÉTHODE EN PSYCHOLOGIE (I.). By *G. Remacle.*—SUR QUELQUES RELATIONS DE LA PENSÉE THÉORIQUE AVEC LES INTÉRÊTS PRATIQUES. By *G. Simmel.*—NOUVELLES ESQUISSES DE PHILOSOPHIE CRITIQUE (V.): LA NORME DE LA PENSÉE ET L'ENCHAINEMENT DES CHOSES. By *A. Spir.*—LA COURBURE ET LA DISTANCE EN GÉOMÉTRIE GÉNÉRALE. By *G. Lechalas.*

PERCEPTION ET MATIÈRE. By *H. Bergson.*—LA SCIENCE RATIONNELLE. By *G. Milhaud.*—SUR UN JUGEMENT ESTHÉTIQUE DE SCHOPENHAUER. By *A. Beaunier.*—NOUVELLES ESQUISSES DE PHILOSOPHIE CRITIQUE (continued): ESSAI SUR LES FONDEMENTS DE LA RELIGION ET DE LA MORALE. By *A. Spir.*—ETUDES CRITIQUES.—(Paris: Armand Colin & Cie.)

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Vol. X. Nos. 3, 4, 5 and 6. Vol. XI. Nos. 1 and 2.

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